

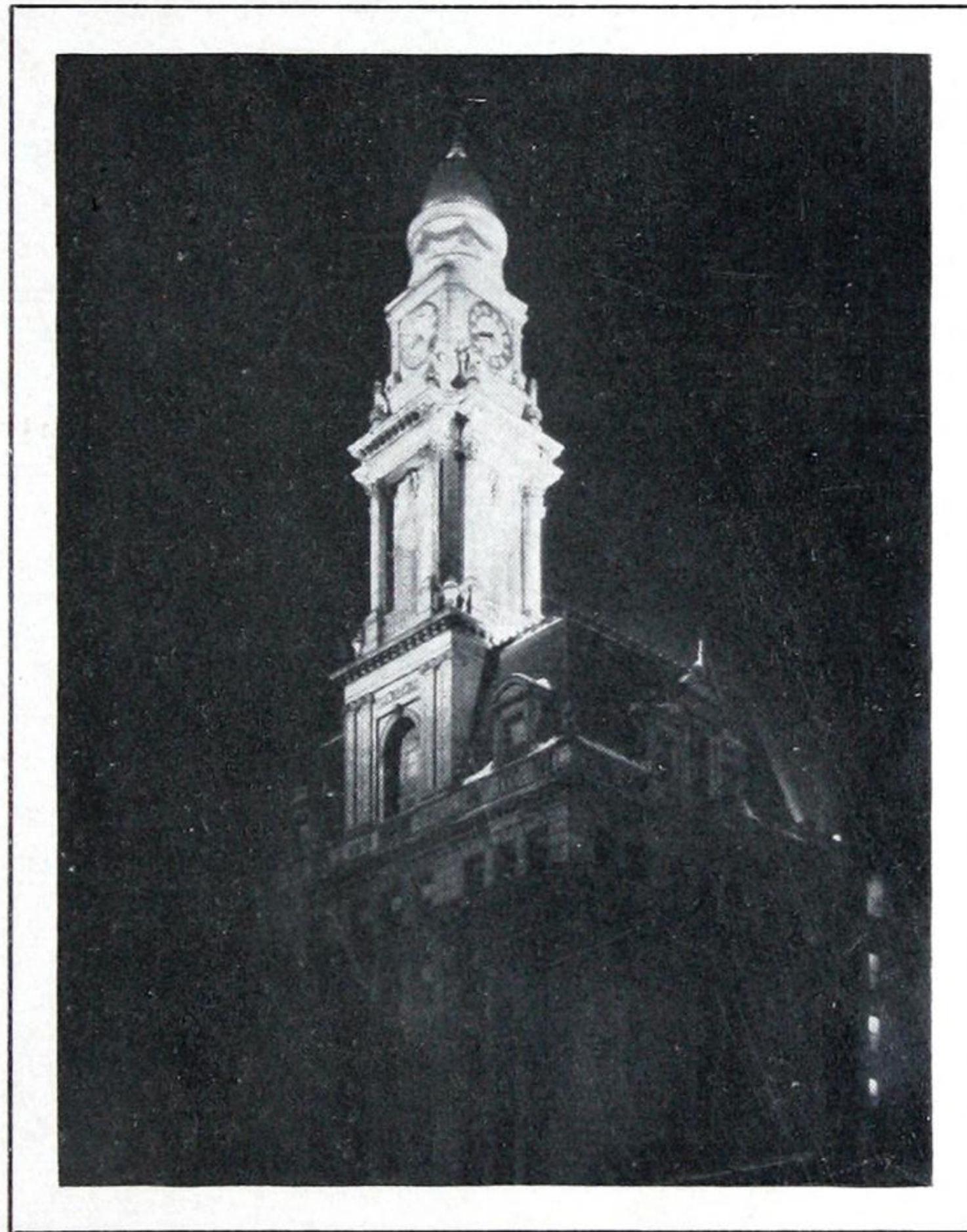
631-3

1929

GEA-161D
Supersedes GEA-161C

NOVALUX

FLOODLIGHTING PROJECTORS



GENERAL ELECTRIC COMPANY
SCHENECTADY, N. Y.

LIBRARY
MUSEUM
GEA-161D

LIBRARY
INSTITUTE
BRANKEIN

[BLANK PAGE]



CCA

NOVALUX FLOODLIGHTING PROJECTORS

Types L-23, L-24, L-25, L-29, L-30, and L-31

NON-FERROUS CASINGS—GLASS REFLECTORS



(Photo No. 281205)

Fig. 1

Side View of Type L-29,
with Clear Plain Lens



(Photo No. 281202)

Fig. 2

Side View of Type L-30,
with Clear Lightly Stippled Lens



(Photo No. 162858)

Fig. 3

Side View of Type L-31,
with Clear Plain Lens

APPLICATION

(1) Office Buildings, Hotels, Banks, Stores, Theaters, Factories, and Power Stations

The floodlighting of public and commercial buildings, with both clear and colored lights, attracts marked public attention and emphasizes architectural beauties at night, when the greatest number of people have opportunity and leisure to see and appreciate them. The value of floodlighting as an advertising medium is evidenced by the ever-growing number of installations.

(2) Monuments and Public Buildings

In every municipality there are some notable examples of architecture—statues, public buildings, places of historic interest—in which the community takes pride. The floodlighting of such structures, with clear or colored lights, adds to their impressiveness and gives them a prominence that is even greater at night than by day.

(3) Railroad Yards, Docks, Bridges, Aqueducts, Reservoirs, and Mines

Locations such as these must be nightly guarded against mischief makers and prowlers. Floodlighting aids materially in such protection. In addition the floodlighting of railroad yards, mines, and docks affords greater speed and safety in handling cars and cargo.

(4) Fountains, Swimming Pools, and Bathing Beaches

The beauty of any fountain, regardless of size, can be enhanced at very little expense by clear and colored floodlighting. Complete fountains can be

obtained as a unit. Swimming pools and bathing beaches can be safely utilized at night where adequate floodlighting is installed.

(5) Billboards, Signs, and Smokestacks

For applications such as these, G-E floodlights can be installed in practically any convenient place and, hence, do not require complicated wiring. They increase the working hours of billboards and multiply advertising value by the contrast of the illuminated surface with its dark background of night.

(6) Baseball, Football, Soccer Fields, Stadiums, and Golf Courses

Most people have no time during the day to attend ball games and athletic meets. In order to allow them to witness or participate in such events, athletic fields are now being floodlighted, for practice as well as for games. Additional revenue from gate receipts will justify the expense of installation and operation. Floodlights may be mounted on poles adjacent to the grounds or on top of the stands and buildings near by.

(7) Winter Sports

G-E floodlighting projectors have been found especially adaptable for lighting winter carnivals, toboggan slides, and skating, hockey, and curling rinks. As the units can be mounted at a considerable distance from the area that is being used, there is no need of poles, which are often dangerous obstructions.

NOVALUX FLOODLIGHTING PROJECTORS

(8) Pageants, Carnivals, Expositions, Circuses, and Fairs

The floodlighting of carnivals and similar events permits a larger attendance than would be possible in the daytime only and adds charm and gaiety to the scene. The use of floodlighting projectors, which are readily portable, obviates the necessity of complicated wiring for a number of small units and simplifies and expedites installation and transfer of equipment.

(9) Gasoline Filling Stations, Roadside Stands, Parking Areas, and Tourists' Camps

With the heavy and annually increasing use of the highways by motorists, a wide demand has arisen for the brilliant lighting of service stations, roadside stands, etc. This demand is completely met by floodlighting, which not only serves the convenience of tourists but conspicuously and favorably advertises the business and location.

(10) Construction Work

Contractors are frequently called upon to do construction work at night. Sometimes it is an emergency repair job; at other times night work is necessary in order to complete a contract on time. Floodlighting projectors, because of their portability, are readily adaptable to this application.

(11) Real Estate Developments, Public Auctions

The floodlighting of real estate developments and houses for sale, as well as locations where prop-

erty will be sold at auction, is a vivid and effective means of attracting prospective purchasers.

(12) Decorative and Spectacular Effects, Landscapes

The floodlighting of residences, gardens, waterfalls, caves, and spectacular natural scenes endows them with new beauties at night and presents a charm quite different from their appearance by day. In the same way, brilliant effects may be obtained in connection with Christmas lighting and decorative illumination for festival occasions.

(13) Air Advertising and Airports

The increasing use of air transportation makes it profitable to advertise the location of buildings or chains of buildings by floodlighting their roofs. In addition a group of floodlights of a distinctive color is, when mounted on the top of a building or chain of buildings, a brilliant identification and excellent method of advertising. Directional signs to airports, mounted on the roofs of buildings, may also be effectively illuminated by floodlights. Airport structures when floodlighted facilitate handling of equipment and provide protection to planes.

(14) Farms, Barns, Chicken Houses, Orchards, etc.

Floodlighting such buildings and locations guards against mischief makers, thieves, and prowlers, and protects farm property in general. The convenience afforded by the floodlighting of farmyards and outbuildings is an obvious advantage to the farmer and his family.

ADVANTAGES

1. Only four casings necessary for all types of light distributions with lamps from 250 to 1500 watts.
2. All casings of non-ferrous metal. All parts resist corrosion.
3. Metal housings totally enclosed, protecting glass reflectors and lamps.
4. Excellent heat radiation due to non-ferrous casing, and permitting minimum dimensions of design.
5. Light in weight because of the material used in construction.
6. Projectors absolutely weatherproof. Asbestos gasket used which does not have disadvantages of vulcanizing or carbonizing as in the case of rubber, and resulting in extremely long life.
7. Ease and accuracy in focusing through the use of unique universal focusing mechanisms.
8. Simple and economical mounting possible because of small three-point base design and swivel mounting. Installation of projector and orienting of beam facilitated.
9. All units totally enclosed, thereby preventing dust and dirt from entering and impairing efficiency.

10. Minimum maintenance and maximum efficiency on account of the use of heat-resisting clear and colored lenses and silvered glass reflectors with copper protective backing.

11. Three sizes of lenses available. Clear lenses with plain, lightly stippled, heavily stippled, and spreadlight, distribution, colored lenses with plain and heavily stippled distribution. All lenses, both clear and colored, are of heat-resisting glass.

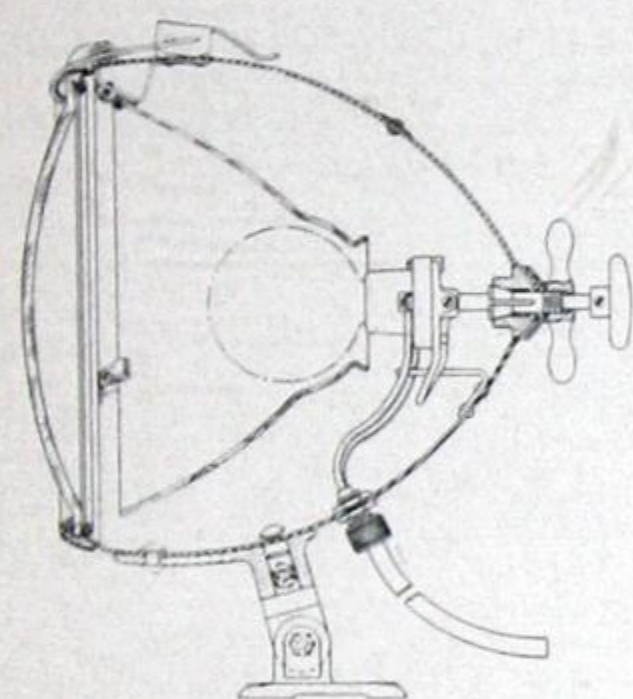
12. Combination of new A-SYM-ETRIC reflector and spreadlight lens, most efficiently used where projectors are mounted close to the base of the surface to be illuminated.

13. Color plates of red, amber, blue, or green in two sizes are available for use with projectors equipped with clear lenses.

14. All reflectors are of glass, silver-plated, and protected by copper backing. Reflectors of the same size are interchangeable in any of the projectors. The use of glass reflectors provides the most efficient type of projector available. It is much more efficient than aluminum or chromium-plated reflector units.

NOVALUX FLOODLIGHTING PROJECTORS

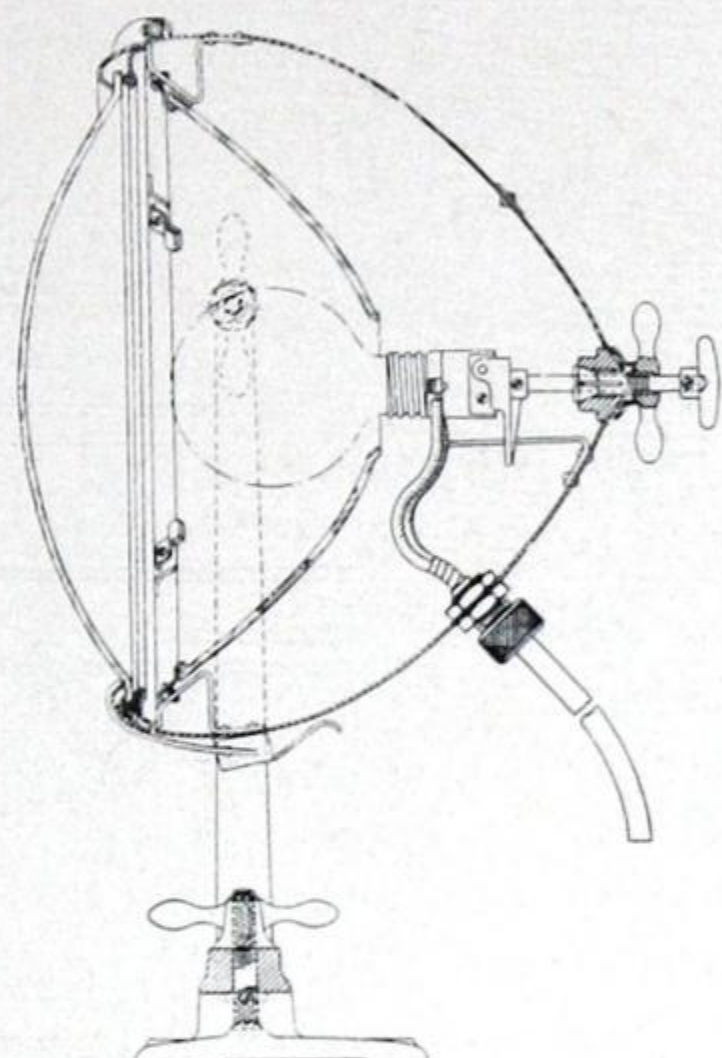
DESCRIPTION



(P-3758082)

Fig. 4

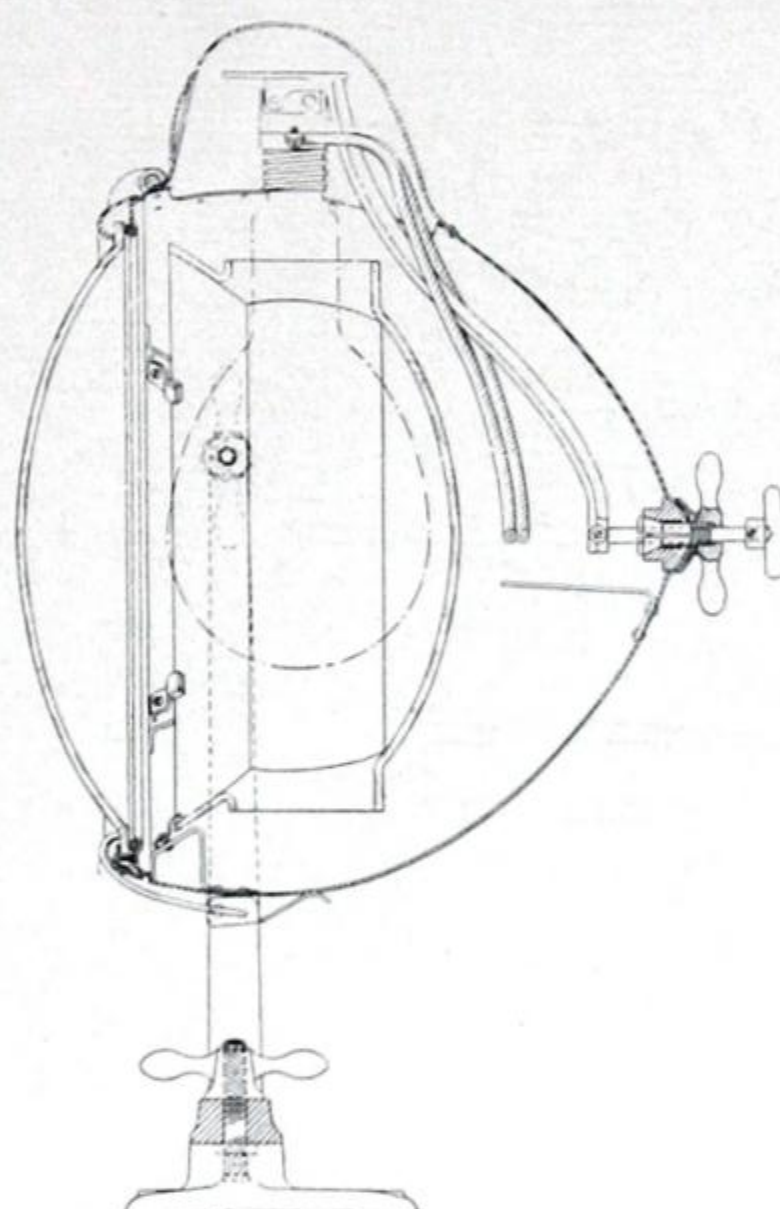
Cross Section of Type L-29, with 250-watt, G-30 Flood-lighting Lamp



(P-3758081)

Fig. 5

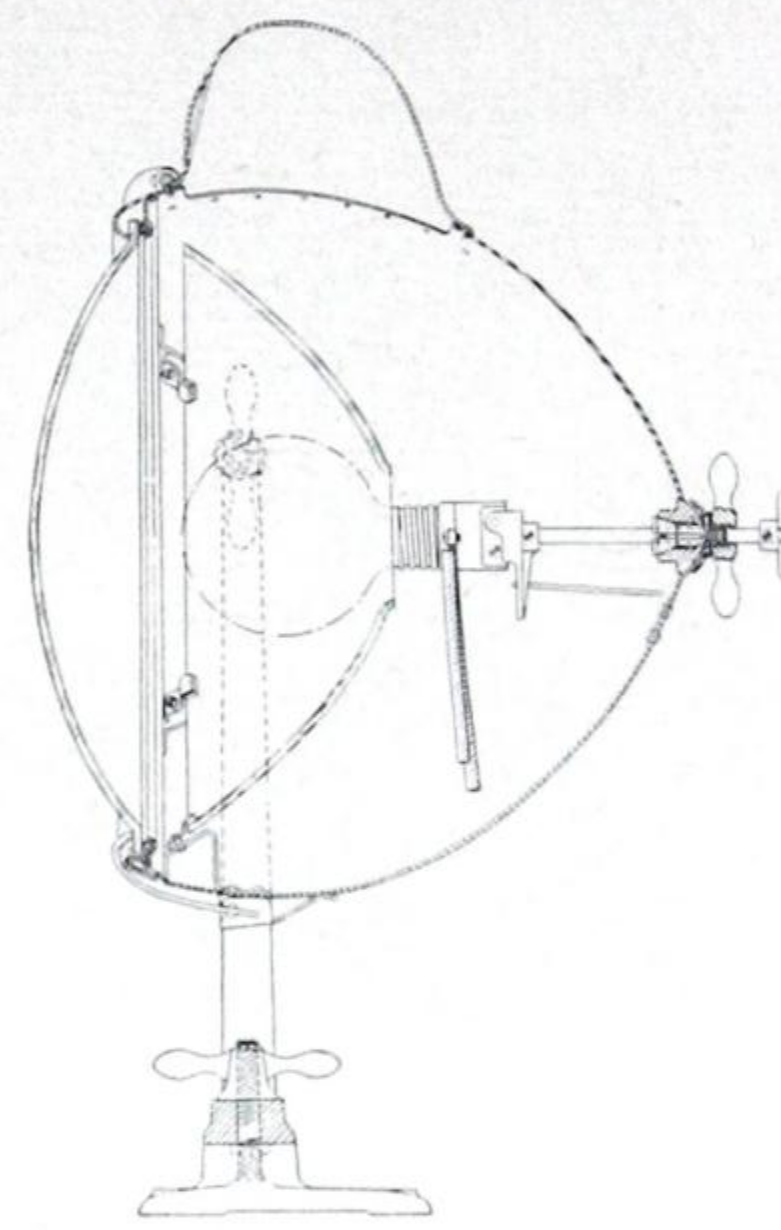
Cross Section of Type L-30, with 500-watt, G-40 Flood-lighting Lamp



(P-3758080)

Fig. 6

Cross Section of Type L-31, with 1000-watt, PS-52 General Service Lamp



(P-3758087)

Fig. 7

Cross Section of Type L-31, with 1000-watt, G-40 Flood-lighting Lamp

TYPES L-29, L-30, AND L-31

The following may be used as specifications:

CASING AND DOOR FRAMES

Projectors are built with a formed, single-piece, sheet-copper casing and single-piece door of the same material. Rear of casing is formed hemispherically in shape and is provided with clearance hole for socket-holder rod of bronze which is part of focusing mechanism. Sheet-copper door is held to casing with hard-copper hinges at top. Door hinges are slotted to permit sufficient lateral movement for glass upon asbestos gasket held in groove, in front of casing, thus obtaining a tight seal. Lens is loosely held within door by means of four punched clips in accordance with common automobile-headlight practice. Door and lens are clamped with equalized pressure (flat surface of glass engaging gasket) against casing by means of lever-actuated, phosphor-bronze spring clamps. All reflectors are supported by means of punched supports and screw clamps, each fitted with asbestos cushions to prevent breakage.

FOCUSING MECHANISM

TYPES L-29 AND L-30

Mechanism, which is universally adjustable, consists of clamping chuck or collett similar to that used on lathes. Socket-holder rod passes through split collett which is threaded at outer end and projects through casing. A T-shaped clamping nut of bronze engages threaded end of collett and forces a hemispherical friction cup of sheet brass against hemispherical back of casing. Socket-holder rod is provided with flat, circular, cast-bronze handle used for adjusting socket and lamp to any required position, providing universal

adjustment. Horizontal movement is effected by slipping socket-holder rod through collett after backing off clamping nut by unscrewing approximately one-half to one turn and reclamping in required position.

TYPE L-31

Mechanism same as for Types L-29 and L-30 except cast-aluminum extension bracket is connected to adjusting rod by means of a push fit and locking set screw. This bracket carries a skeleton base mogul socket.

MOUNTING

TYPE L-29

The projector is supported by means of a universally adjustable swiveled crowfoot base of cast bronze.

TYPES L-30 AND L-31

The projector is supported on a swiveled trunnion bracket of bronze with a bronze crow-foot base permitting universal adjustment of beam.

REFLECTORS

Reflectors are of silvered glass protected by a coating of electrolytically deposited copper.

TYPE L-29

(a) Paraboloidal type of reflector $10\frac{7}{16}$ inches in diameter, producing a medium-angle beam of approximately 15 degrees.

(b) Asymmetrical type of reflector producing maximum light intensity at top of beam.

NOVALUX FLOODLIGHTING PROJECTORS

TYPE L-30

(a) Paraboloidal type of reflector $14\frac{3}{4}$ inches in diameter, producing a medium angle beam of approximately 12 degrees.

(b) One-piece sectional glass reflector $14\frac{3}{4}$ inches in diameter, producing a wide beam of approximately 50 degrees.

(c) Asymmetrical type of reflector producing maximum light intensity at top of beam.

TYPE L-31

(a) Combination paraboloidal and spherical reflector $14\frac{3}{4}$ inches in diameter, producing a wide-angle beam of approximately 28 degrees.

(b) Paraboloidal type of reflector $14\frac{3}{4}$ inches in diameter, producing a medium angle-beam of approximately 12 degrees.

(c) Asymmetrical type of reflector producing maximum light intensity at top of beam.

LENSES

Lenses are of heat-resisting glass, which must withstand extremes of temperatures such as heating in boiling water to 212 deg. F. followed by plunging into ice water at 32 deg. F. and vice versa.

CLEAR LENSES

Clear lenses are available in the following designs: plain, lightly stippled, heavily stippled, and 40-deg. spreadlite.

COLOR LENSES

Colored lenses are available in plain and heavily stippled designs and in the following colors: red, amber, blue, and green.

(A) Type L-29. Lens diameter $11\frac{1}{4}$ inches.

(B) Types L-30 and L-31. Lens diameter $15\frac{3}{4}$ inches.

COLOR PLATE INSERTS

Color plates are available in two sizes and four colors (red, amber, blue, and green)—one size suitable for inserting in the Type L-29 and the other in the Types L-30 and L-31 projectors equipped with any of the clear lenses. Clips for holding these plates in position are mounted in all projectors as standard equipment.

FINISH

All parts natural finish acid-dipped.

TYPES L-24 AND L-25

CASING AND DOOR FRAMES

Units have a cone-shaped two-part casing of aluminum alloy, a hinged front door, and a hinged rearward section for relamping or cleaning from the back of the projector without disturbing direction of beam. All screws and bolts are of corrosion-resisting material. All joints are made weatherproof by the use of asbestos gaskets.

The Types L-24 and L-25 are totally enclosed and may be operated with 750-, 1000-, or 1500-watt lamps.

FOCUSING MECHANISM

Mechanism consists of a split ball-and-socket type with a retarding spring yoke and single-clamping screw, which allows movements of socket in any direction, thus permitting accurate focusing of the lamps. The retarding spring prevents lamp breakage and further facilitates focusing. The Type L-24 projectors have a lamp socket at the top arranged for base-up-burning lamp, while the Type L-25 projector has the lamp socket at the bottom arranged for base-down-burning lamp.

MOUNTING

Unit is mounted on a trunnion bracket and swivel base which are hot-dip galvanized. This method of mounting allows the adjustment of the beam in any direction. Such adjustments are locked in place by means of vise handles. The base is of a crowfoot design, and the dimensions are in accordance with A.R.E.E. specifications. This design allows mounting the projector close to the edge of the tower or platform.

REFLECTORS

These units are provided with two reflectors, the front one, of parabolic shape, is attached to the front stationary part of the projector. The rear one, of shallow parabolic and spherical sections, is attached to the movable rear door. These reflectors are of blown glass, silvered and hermetically sealed by a heavy coating of electrolytically deposited copper which entirely envelopes the outer surface of the mirror. This coating, in addition to protecting the silvered glass, assists in radiating heat from the lamp. Such a design of composite reflectors gives a greatly increased value of central beam candle power and beam lumens over other existing designs. Reflector diameter is $18\frac{1}{2}$ inches where the outer section is fastened to the projector casing.

LENSES

Lenses are of heat-resisting glass which must withstand extremes of temperature such as heating in boiling water at 212 deg. F. followed by placing in ice water at 32 deg. F. or vice versa. They are $19\frac{1}{16}$ inches in diameter and are available only in clear plain, clear lightly stippled, and clear 50-deg. spreadlite designs.

FINISH

Natural finish on casing and other parts. Hot-dip galvanized finish on trunnion and base.

All projectors are equipped with 8 feet of cable.

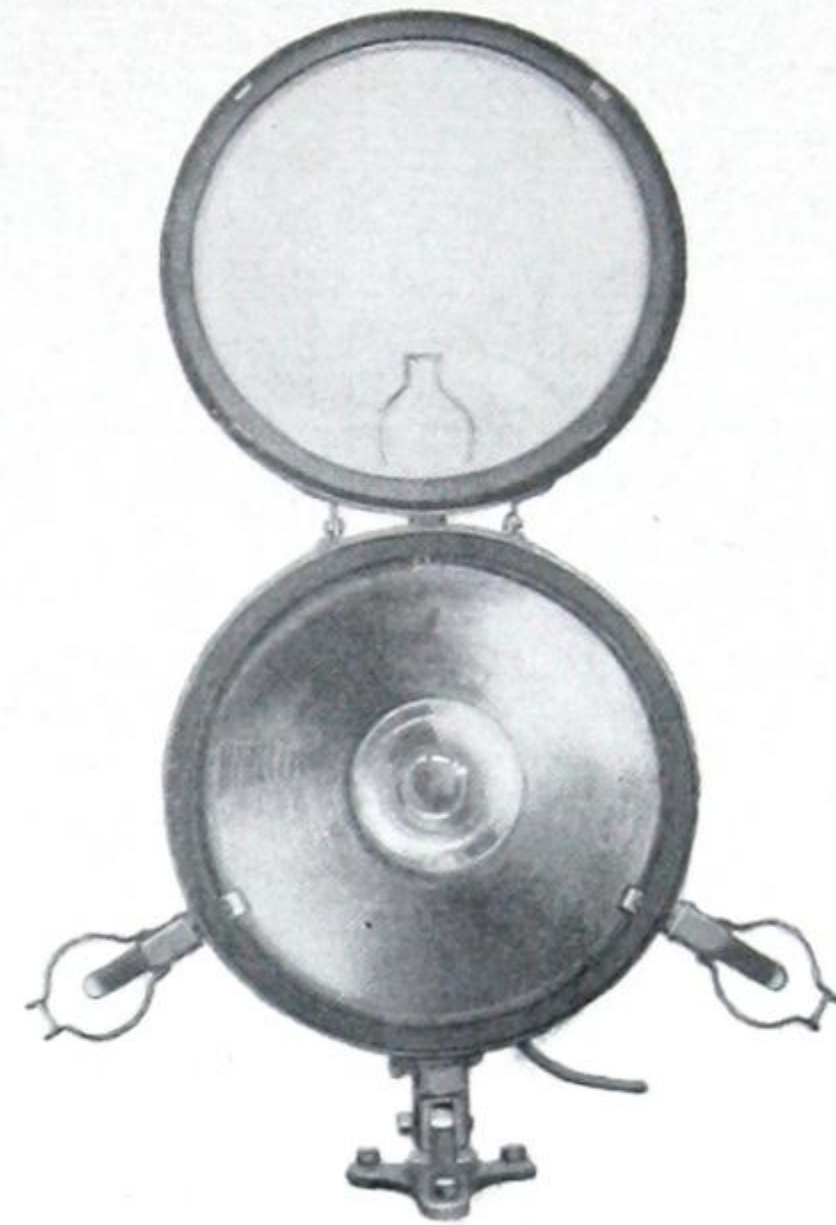
NOVALUX FLOODLIGHTING PROJECTORS

TYPE L-29 DESCRIPTION AND APPLICATION

The Type L-29 projector is designed primarily for use with a 250-watt floodlighting lamp. It is, therefore, small in size and particularly adapted for mounting in places where the available space is limited. It is equipped with a medium angle parabolic reflector and is suitable for working distances up to 200 feet.



(Photo No. 281204)
Fig. 8
Front View of Type L-29
with Clear Plain Lens



(Photo No. 281206)
Fig. 9
Interior View of Type L-29



(Photo No. 438217)
Fig. 10
Dade County Court House, Miami, Florida

NOVALUX FLOODLIGHTING PROJECTORS



(Photo No. 119826)

Fig. 11

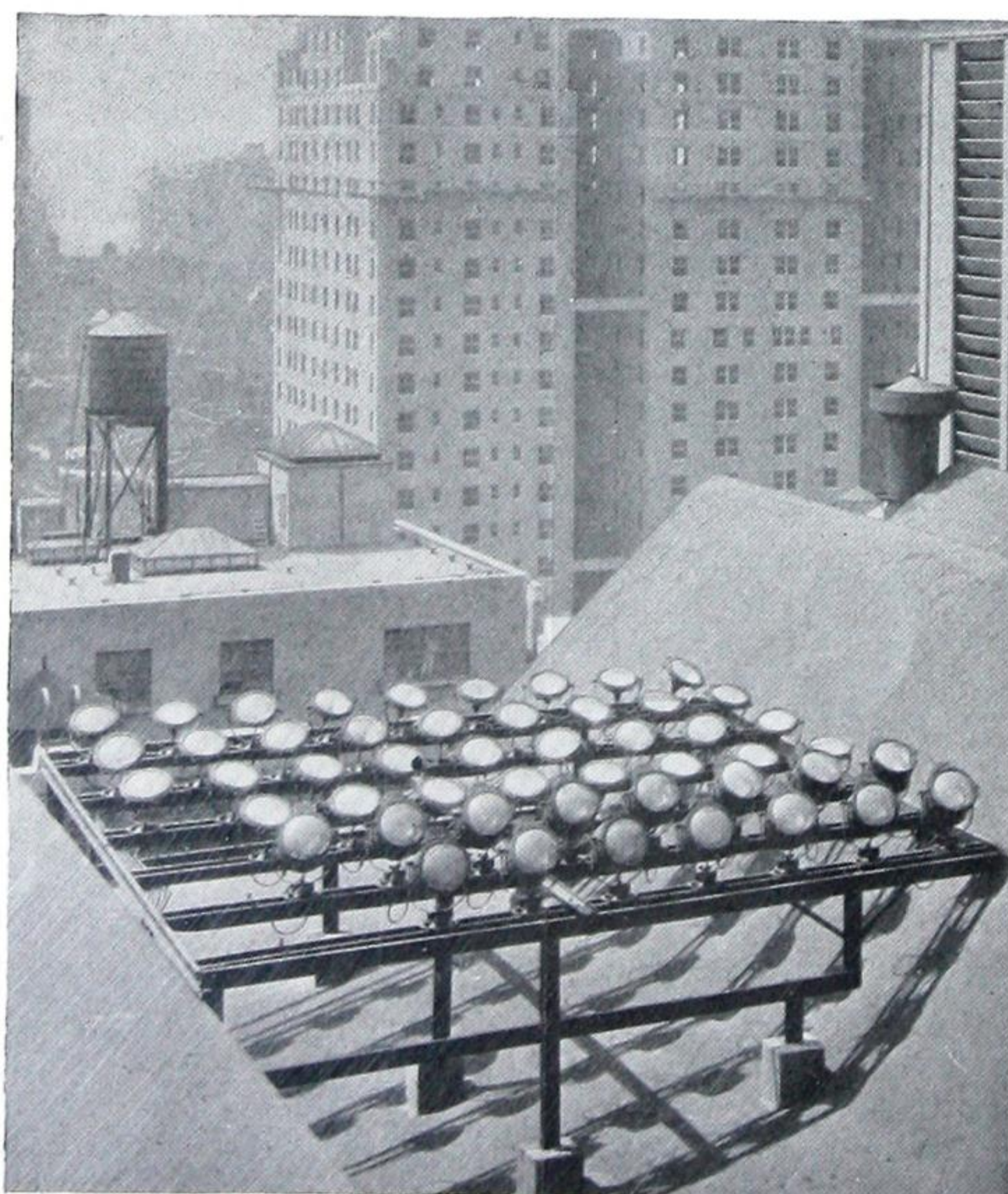
State Capitol Building, Austin, Texas



(Photo No. 438193)

Fig. 12

Union Terminal Building, Cleveland, Ohio



(Photo No. 438076)

Fig. 13

Paramount Theatre and Office Building, New York City



(Photo No. 438198)

Fig. 14

Union Terminal Building, Cleveland Ohio

NOVALUX FLOODLIGHTING PROJECTORS

TYPE L-30 DESCRIPTION AND APPLICATION



(Photo No. 281201)

Fig. 15

Front View of Type L-30
with Clear Lightly Stippled Lens



(Photo No. 281203)

Fig. 16

Interior View of Type L-30

The Type L-30 projector is designed primarily for use with a 500-watt floodlighting lamp. It is a very compact unit and is readily mounted in small spaces. For this projector there are available two reflectors; one gives a medium-angle beam, and can be used for a working distance up to 400 feet. The other is of sectional glass construction giving a wide beam and can be used for a working distance up to 100 feet. These two reflectors, with the various lenses available, afford any desired distribution.

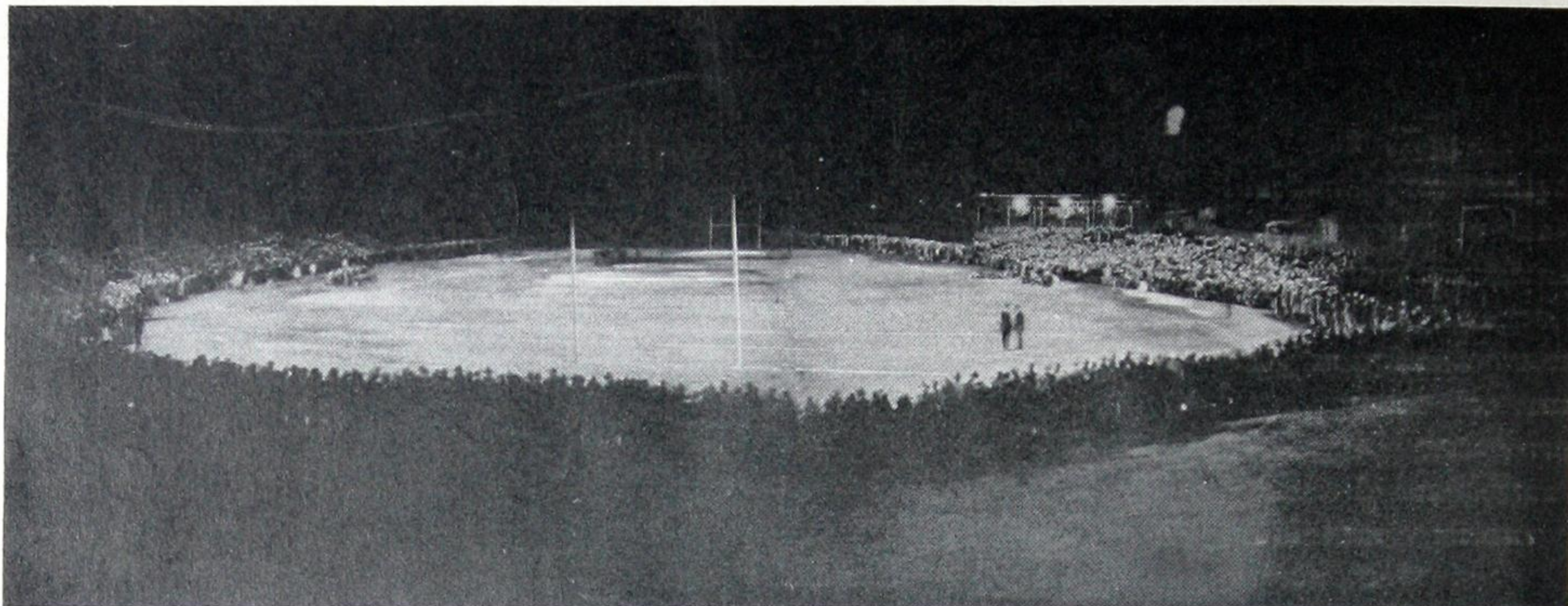


(Photo No. 438140)

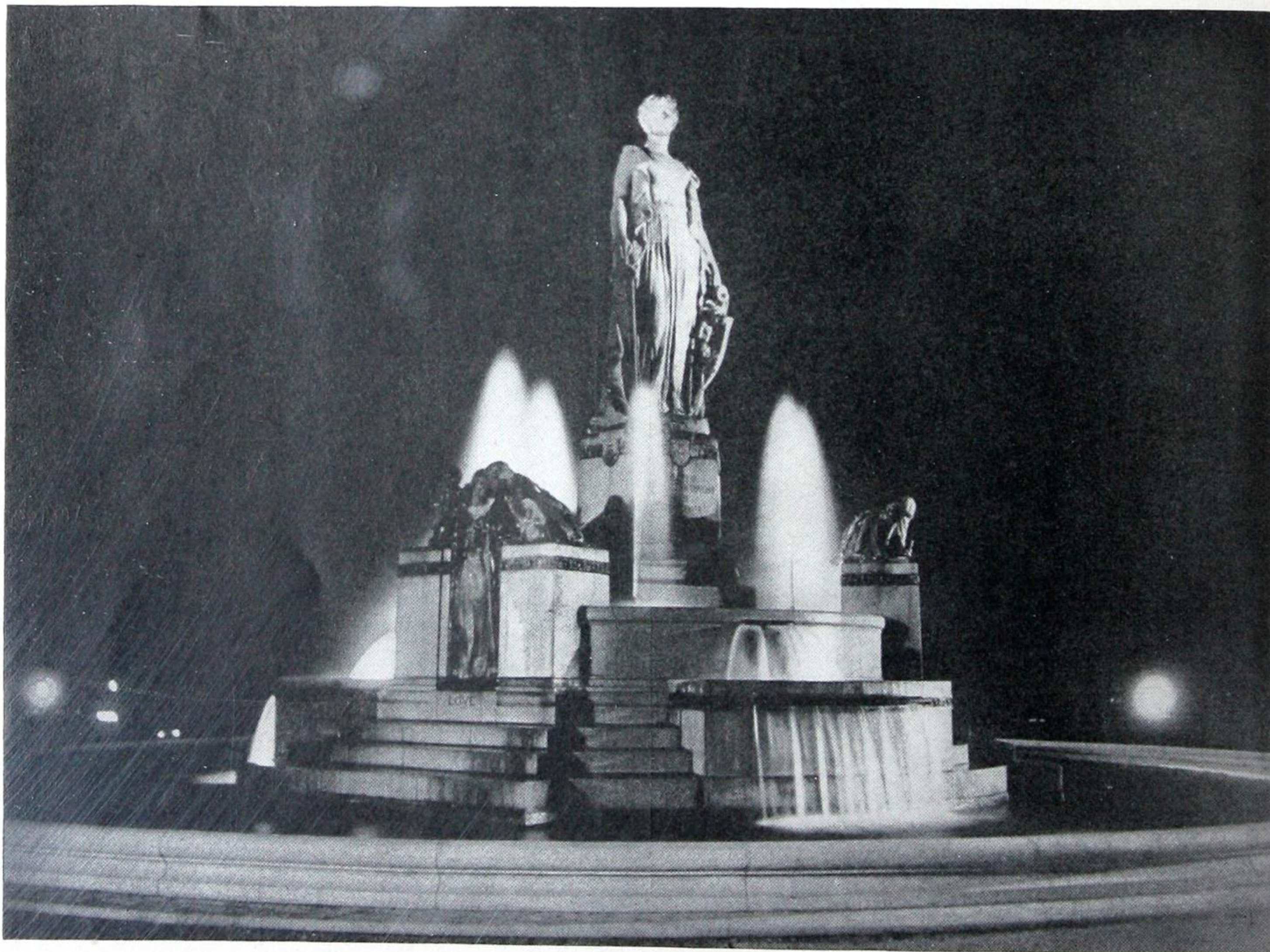
Fig. 17

The People's Bank, Johnstown, N. Y.

NOVALUX FLOODLIGHTING PROJECTORS



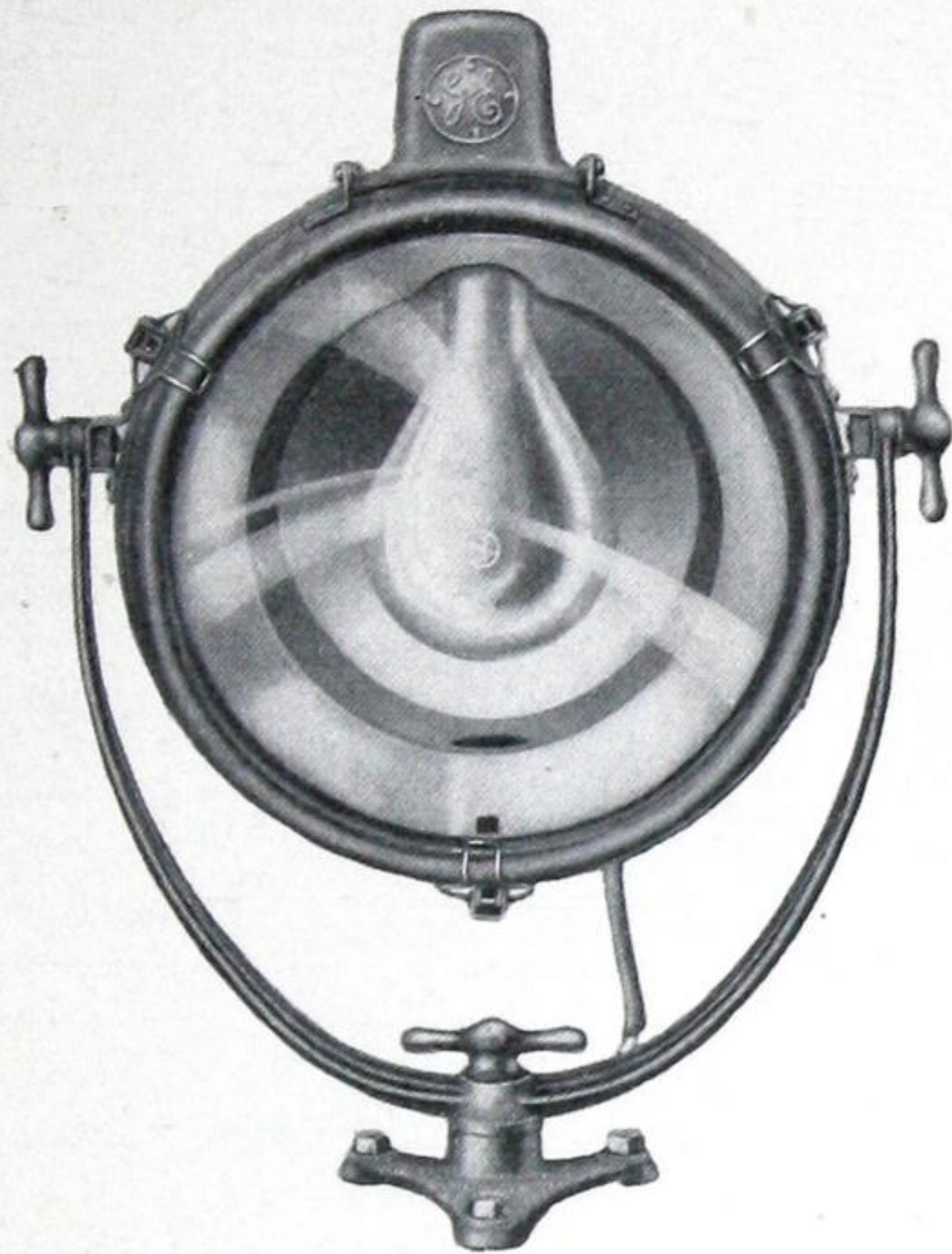
(Photo No. 277353)
Fig. 18
Football Game at Night



(Photo No. 448312)
Fig. 19
Thatcher Monument, City Park, Denver, Colo.

NOVALUX FLOODLIGHTING PROJECTORS

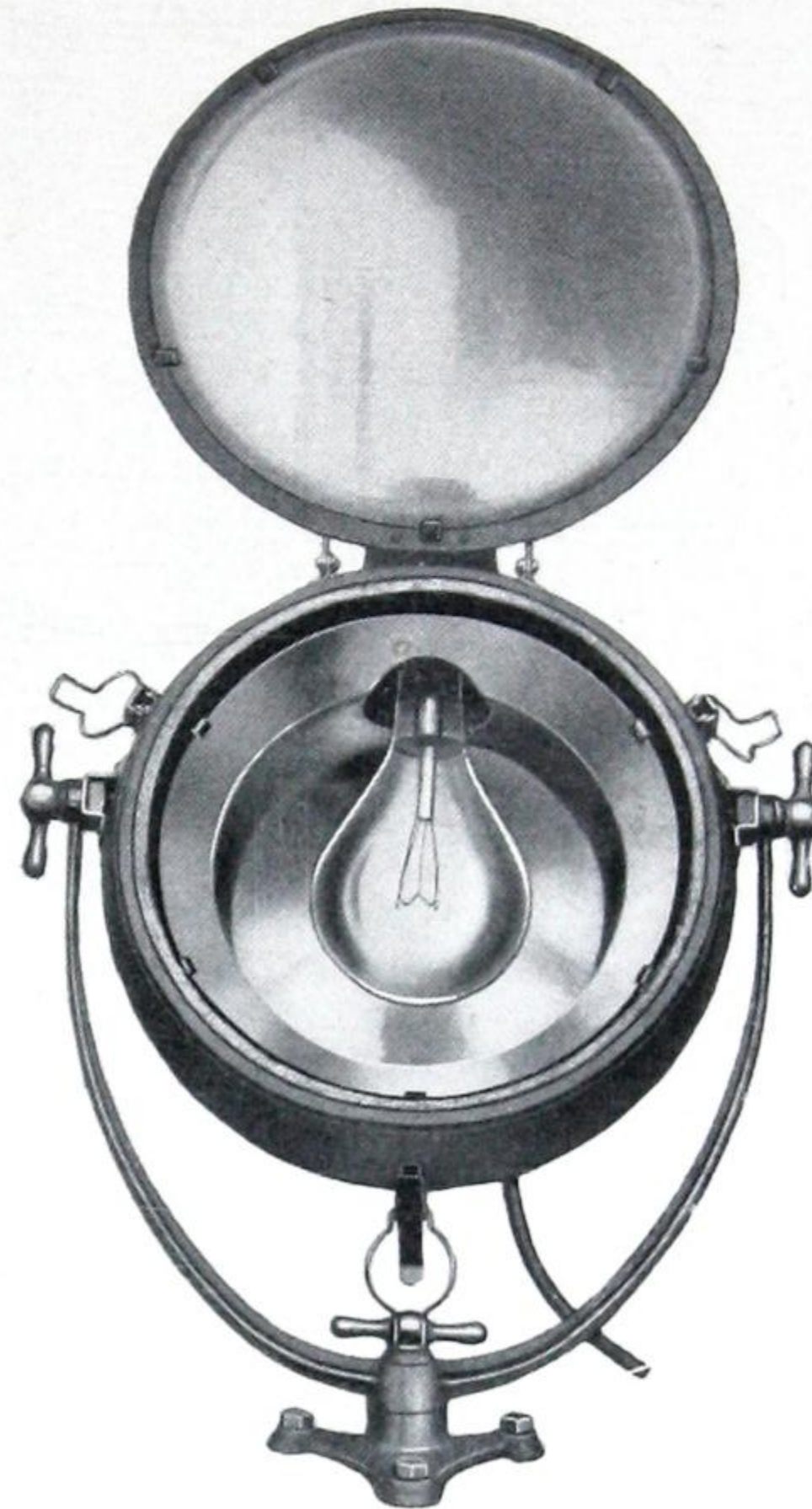
TYPE L-31 DESCRIPTION AND APPLICATION



(Photo No. 162857)

Fig. 20

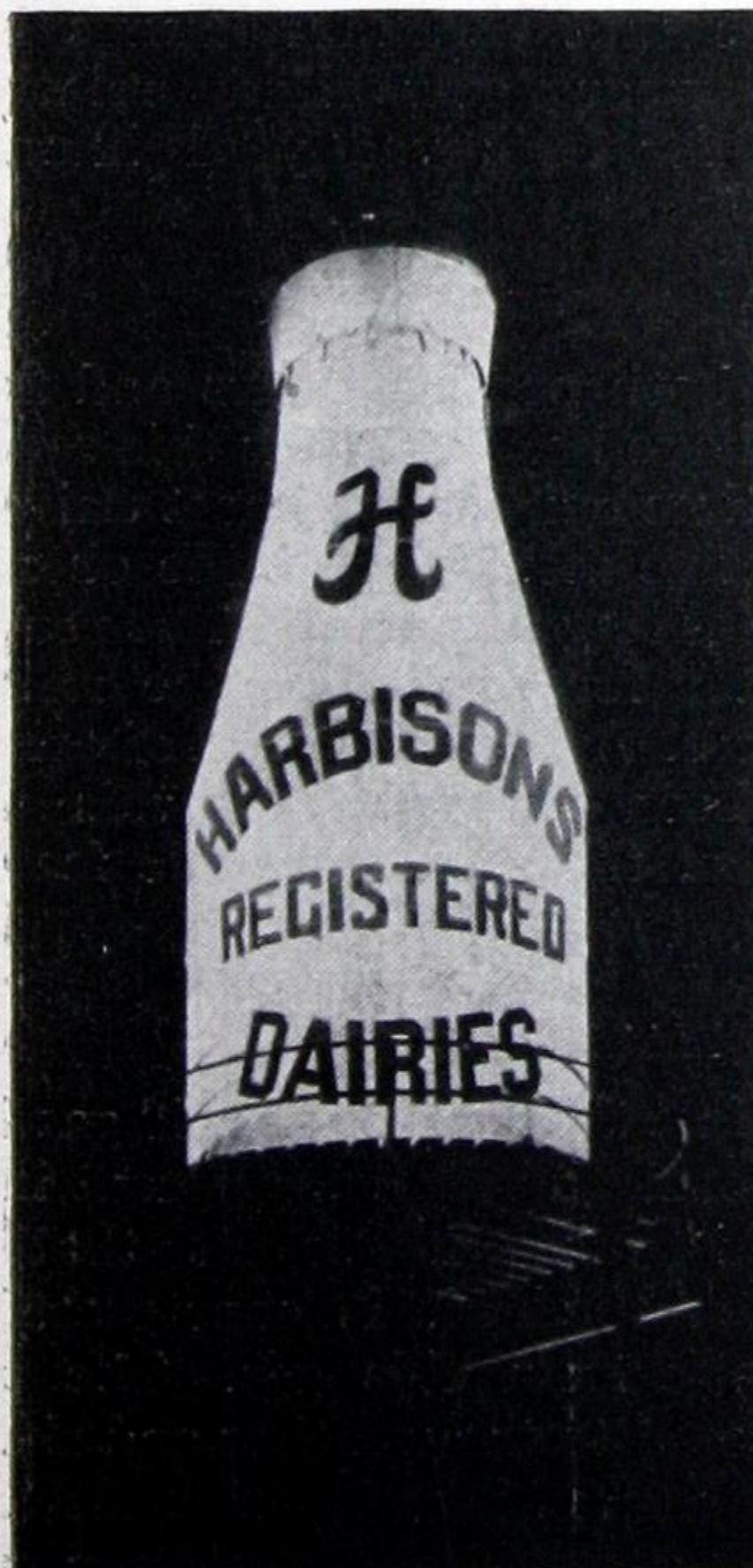
Front View of Type L-31, with Clear Plain Lens and 1000-watt PS-52 General-service Lamp



(Photo No. 162859)

Fig. 21

Interior View of Type L-31, with 1000-watt, PS-52, General-service Lamp

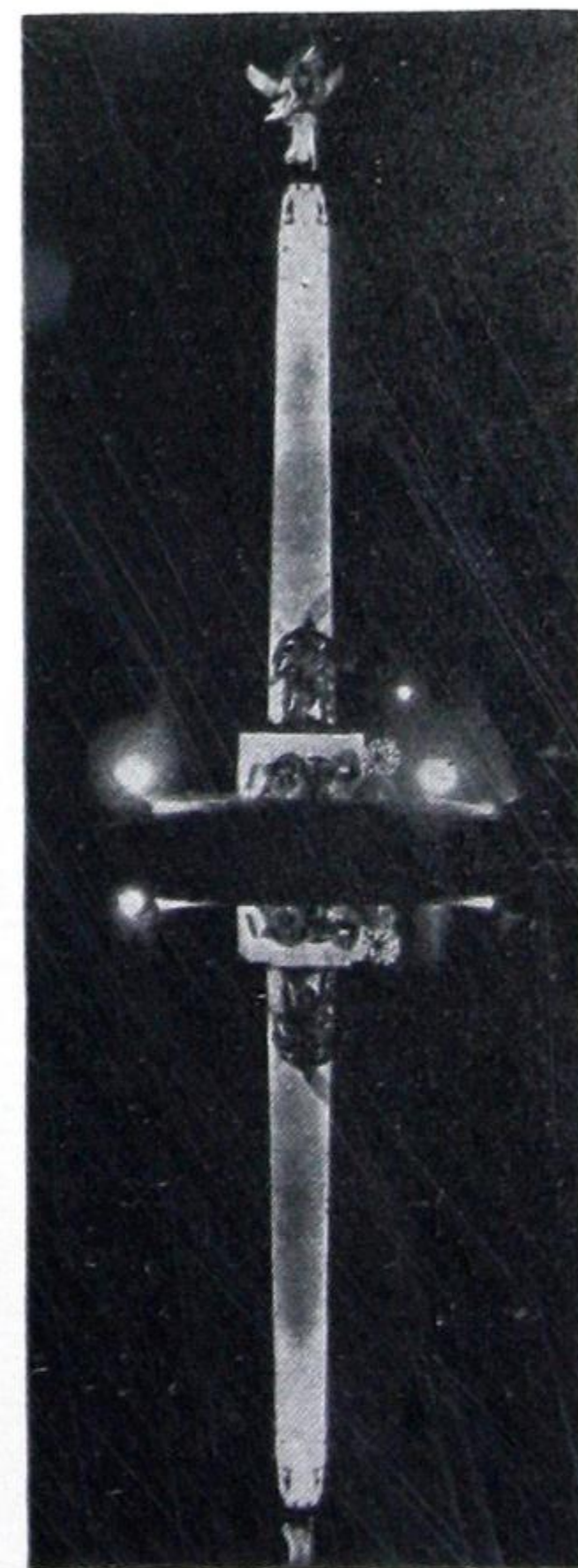


(Photo No. 239063)

Fig. 22

Water Tower

The Type L-31 projector is designed primarily for use with a 1000-watt lamp. There are available two reflectors, the first being of the composite type, but of a single piece. With this reflector, is used the general service 1000-, 750-, 500-, or 300-watt, PS lamp. This gives a wide beam and is suitable for mounting distances up to 175 feet. The other reflector is designed for use with a 1000- or 500-watt G-40 floodlighting lamp. It gives a medium-angle beam and is suitable for working distances up to 800 feet.



(Photo No. 436152)

Fig. 23

Montclair Memorial, Montclair, N. J.

NOVALUX FLOODLIGHTING PROJECTORS

TYPES L-24 AND L-25

For Railroad Classification Yards and Other Large-area Lighting

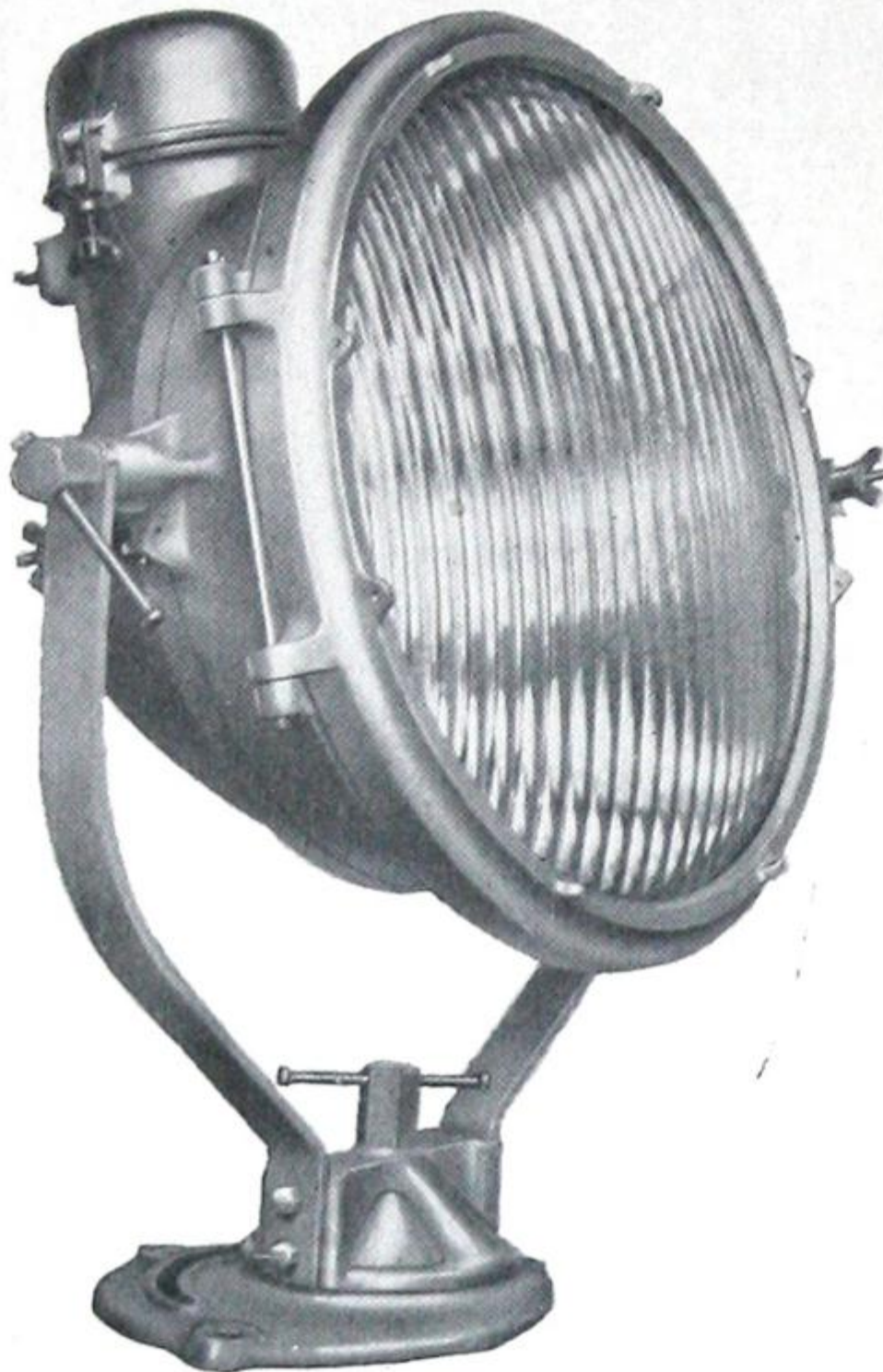


Fig. 24

(Photo No. 279574)

Type L-24 without Visor, with 50-degree Spreadlight Lens



Fig. 25

(Photo No. 278417)

Type L-25, with Visor

ADVANTAGES OF RAILROAD YARD LIGHTING

Over two-thirds of the gross income of our railroads is derived from the handling of freight. This movement of freight cars is continuous, and anything which tends to expedite it with a decrease in breakage and theft and with less danger to the train operators is consequently of the utmost importance not only to the railroads but also to our whole economic life. Statistics collected by some of our larger railroad systems prove the many advantages of proper lighting of the railroad yard.

The Committee on Illumination of the Association of Railroad Electrical Engineers in November, 1923, reported the following advantages of yard lighting:

1. Speeding up of cars handled in the yard at night.
2. Reduction of cars damaged by rough handling and collision in the classification yard, with consequent reduction in claims, delay in delivery of goods, loss of service of damaged cars, etc.
3. Reduction in losses due to pilfering, on account of more effective policing possible with a well-illuminated yard.
4. Improved working conditions and increased safety for employees working in the yard.

That these benefits are appreciable is evidenced by the fact that certain railroads have during the last year authorized relatively large expenditures for improved yard illumination.

GENERAL REQUIREMENTS

In past years, both pendent units and floodlighting projectors have been used for this service, but at the present time opinion is almost universal that the most effective results are to be obtained by the use of floodlighting projectors. The requirements of a projector for service in the railroad yard are most severe. An examination of existing units which had been proposed for this work showed that many of the most desirable features were lacking.

MATERIAL

Because of the fact that sulphuric acid gas from the smoke of the locomotives is ever present in the railroad yard, it is most important that the material from which the unit is constructed be impervious to attack from this gas. The units are at all times exposed to the weather and should, therefore, be weatherproof and be built of a material which does not rust. These two requirements indicate that a cast-aluminum alloy construction is suitable.

NOVALUX FLOODLIGHTING PROJECTORS

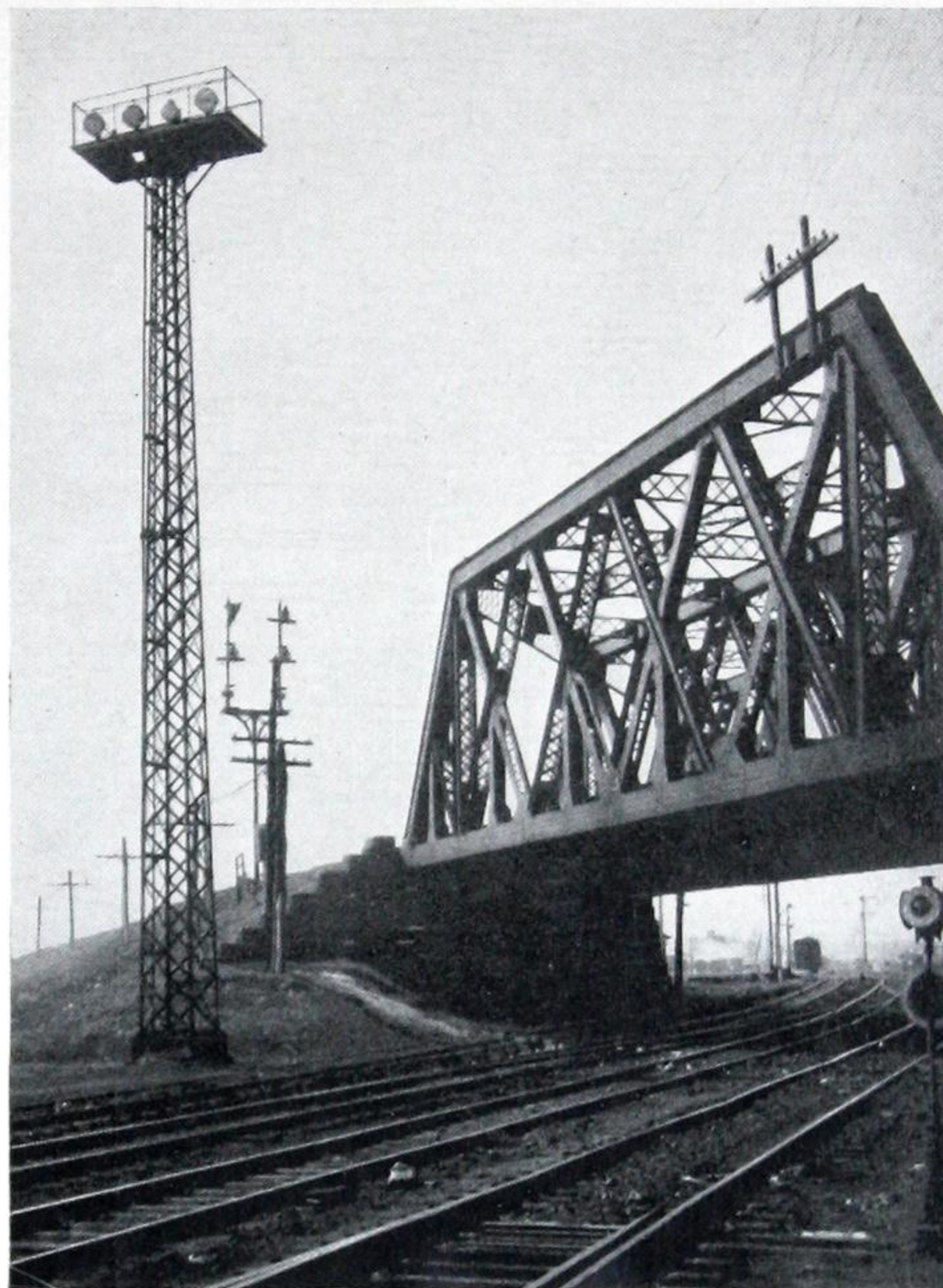
MECHANICAL DETAILS

The projectors are, as a rule, mounted on high towers where space for the electrician or maintenance man is very limited. In many cases the platform from which these men must operate is at the rear of the unit and in such cases it is most important that they be able to relamp or clean the projector from the rear without changing the direction of the beam. The best way to obtain this feature is by the use of a unit which has a hinged back door.

PHOTOMETRIC RESULTS

The determining factor on the quantity of light in the yard is the value of beam lumens from the projector. Consequently, careful consideration should be given to the efficiency of the unit. Since in many cases the throw is 1000 feet or more, the unit must have a high value of central beam candle power. Towers and space in the railroad yard are very expensive and anything that can be done to reduce the number of projectors necessary to light a given area is a most important consideration. With the above-mentioned points in mind, the engineers of the General Electric Company have developed railroad yard-lighting projectors which possess all these advantages.

Because of their very high efficiency, these projectors are more economical than any other unit on the market and are suitable for intensive large-area lighting and are particularly adapted for the lighting of railroad yards and the floodlighting of large buildings and signs. Standard 110- or 220-volt, 750-, 1000-, and 1500-watt, general service base-up-burning lamps can be used in the L-24 projectors while the 110-volt, 1000-



(Photo No. 272661)

Fig. 26

Projectors Mounted on Towers

watt base-down-burning floodlighting lamp can be used in the L-25 projector. The most economical results are obtained with the larger lamps.



(Photo No. 444230)

Fig. 27

Kentucky and Indiana Terminal Railway Yards, Louisville, Kentucky

NOVALUX FLOODLIGHTING PROJECTORS

HOW TO FOCUS

In focusing, care should be taken to see that the center of the lamp filament is in the exact center of the rear reflector. It is also important that the filament be brought into the focal point along the horizontal axis at right angles to the adjustment mentioned on previous pages.

METHOD OF SOLVING FLOODLIGHTING PROBLEMS

Assume a light-colored building, 100 by 80 ft., total area 8000 sq. ft. Location, residential section. Units must be installed 25 feet from surface to be illuminated.

What type of floodlighting unit, foot-candle intensity, and number of units are required?

FLOODLIGHTING INTENSITIES

$$N = \frac{A \times E}{L}$$

N = Number of projectors.
 A = Area of building façade.
 E = Foot-candle intensity required.
 L = Beam lumens delivered by one projector.

Application	RECOMMENDED FOOT-CANDLE INTENSITIES	
	Good Practice	Minimum
(1) Office buildings.....	See following table	See following table
Hotels.....		
Banks.....		
Stores.....		
Theatres.....		
Factories.....		
Power stations.....		
(2) Monuments		
Public buildings.....		
(3) Railroad yards		
(a) Classification.....	0.15	0.1
(b) Mechanical retarder areas.....	1.0	0.5
Docks, loading platforms, etc.....	3.0	2.0
Aqueducts.....	1.0	0.5
Reservoirs.....	1.0	0.5
Mines.....	1.0	0.5
(4) Swimming pools.....	6.0	3.0
Bathing beaches.....	1.0	0.5
(5) Billboards.....	30.0	10.0
Signs.....	30.0	10.0
Smokestacks and water tanks.....	12.0	8.0
(6) Base-ball.....	12.0	6.0
Football.....	12.0	6.0
Soccer field.....	12.0	6.0
Stadiums.....	12.0	6.0
Trap shooting.....	15.0	10.0
Playground.....	4.0	2.0
Golf greens.....	10.0	6.0
(7) Winter sports.....	2.0	1.0
(8) Pageants	20.0	5.0
Carnivals		
Expositions		
Circuses		
Fairs		
(9) Gasoline filling stations		
(a) Buildings and pumps.....	15.0	10.0
(b) Yard and driveways.....	4.0	2.0
Roadside stands.....	4.0	2.0
Parking areas.....	1.0	0.5
Tourists' camps.....	2.0	0.5
(10) Quarries and ship yards.....	6.0	2.0
Construction work.....	6.0	4.0
Dredging.....	2.0	1.0
(11) Real estate developments.....	10.0	5.0
Public auctions.....	10.0	5.0
(12) Decorative and spectacular effects		
(Christmas trees, flags, etc.).....	20.0	10.0
Landscapes.....	15.0	5.0
Stained glass windows.....	30.0	15.0
(13) Air advertising.....	30.0	15.0
(14) Farms.....	1.0	0.5
Barns.....	1.0	0.5
Chicken houses.....	1.0	0.5
Orchards.....	1.0	0.5

RECOMMENDATIONS

The L-24 and L-25 projectors are adapted for railroad yards on account of being dust-proof, and may be used with lamps up to 1500 watts capacity.

Factors given: Working distance, 25 feet; surroundings, residential section; surface of building, light. (8000 sq. ft.)

Refer to the formula for beam diameter in feet given opposite and at a working distance of 25 feet. The L-30 projector with heavily stippled door is selected because its beam covers a large area and it proves to be the most economical projector for this application.

The table of intensities shows that a light-colored surface in a residential section requires 5 foot-candles.

Refer to formula

$$N = \frac{A \times E}{L} \quad A = 8000; E = 5; L = 3840$$

$$N = \frac{8000 \text{ (sq. ft. area)} \times 5 \text{ (foot-candles)}}{3840 \text{ (beam lumens—Type L-30)}}$$

$$N = 10.4, \text{ or } 10 \text{ projectors}$$

Reasonable allowance should be made for overlapping of beams so as to produce an adequate and even illumination over the area to be floodlighted. Beam diameter can be determined from formula above.

There is a constantly increasing appreciation of the value of colored floodlighting. In many instances it has been recommended that this be made mobile. This can be accomplished through reactance dimmers on both the colored and the white lighting or by dimming only the white lighting and allowing the colored lighting to remain at its full brilliance at all times.

For high commercial buildings, where the illumination is not influenced by street lights, it has been found that 2 watts per square foot of clear light and 4 watts per square foot of colored light will give excellent results. Each proposition, however, presents its own problems involving many considerations, such as building surfaces, viewing distances, brightness of surrounding objects, etc., so that it would be best to refer special colored-floodlighting propositions to the illuminating engineering laboratory.

The illuminating engineering laboratory of the General Electric Company will make floodlighting recommendations concerning objects to be illuminated, upon receipt of further data as follows:

Size and color.

Distance between objects.

Locations suitable for projectors.

Nature of lighting in the vicinity.

BUILDINGS

Building Surfaces	Reflection Factors Per Cent	RECOMMENDED FOOT-CANDLE INTENSITIES		
		A	B	C
White terra cotta.....	60-80	15	10	5
Cream terra cotta.....				
Light marble.....				
Light gray limestone.....	40-60	20	12	7
Bedford limestone.....				
Buff limestone.....				
Smooth buff face brick..				
Briar hill sandstone.....	20-40	25	15	10
Smooth gray brick.....				
Medium gray limestone..				
Common tan brick.....				
Dark field gray brick... }	10-20	30	18	*12
Common red brick..... }				
Brownstone.....				

A—Buildings on white ways; intensive street lighting; streets with many conflicting signs and light sources; lower portions of buildings falling under Class B locations.

B—Medium intensity white ways; secondary business streets with few conflicting signs, etc.

C—Very little conflicting light such as on residential streets, parks lighted highways, etc.

The above suggestions can be only general and it will be found necessary to modify them in many instances to fulfill local conditions. Careful consideration must be given to existing illumination which will affect the solution of the problems. Propositions involving special conditions should be referred to the illuminating engineering laboratory with complete information on conditions.

* Color lighting requires particularly careful study. It frequently is found advisable to use colored light on colored buildings, such as red light on red brick, for the best effect.

NOVALUX FLOODLIGHTING PROJECTORS

Types L-24, L-25, L-29, L-30, and L-31

ILLUMINATING DATA (For Estimating Purposes Only)

TYPE	WORKING DISTANCE	LAMP 115-VOLT	REFLECTORS	LENSES CLEAR	BEAM			TOTAL LUMENS	F	PHOTO- METRIC CURVES
					Angle in Degrees	Candles	Lumens			
L-29	Up to 200 ft.	250-watt G-30 Flood- light Lamp 3 in. L.C. Medium Base	10 ⁷ / ₁₆ -in. Parabolic Glass Silver Plated	Plain Lightly Stippled Heavily Stippled 40 Degree Spread	15 25 34 15V-49H	85000 25000 18800 20400	1500 1550 1610 1700	2385 2350 2330 2380	0.26 0.44 0.61 0.26V-0.91H	C-61242 H-32853 H-32854
			10 ⁷ / ₁₆ -in. Asymetric	40 Degree Spread	.....	.....	.....	.....	.....	.....
L-30	Up to 400 ft.	π500-watt G-40 Flood- light Lamp. 4 ¹ / ₂ in. L.C. Mogul Base	14 ³ / ₄ -in. Medium Angle Glass Silver Plated	Plain Lightly Stippled Heavily Stippled 40 Degree Spread	12 28 50 14V-42H	305000 54000 28000 78000	3405 3650 3840 3700	6100 5900 5780 5810	0.21 0.5 0.93 0.25V-0.77H	H-130841 H-132941 H-130842 H-132759
			14 ³ / ₄ -in. Asymetric	40 Degree Spread						
		Up to 100 ft.	π500-watt G-40 Flood- light Lamp 4 ¹ / ₂ in. L.C. Mogul Base	14 ³ / ₄ -in. Wide Angle One-piece Sectional Glass, Silver Plated	Plain Lightly Stippled Heavily Stippled	50 57 90	21000 12000 6500	3270 3500 4320	4950 4800 4680	0.93 1.09 2.00

CHANGE NOTICE FOR GEA-161D

To be pasted on page 15

Page 15

Type L-24 and L-25 reflectors should be "18½ in."

Page 16

Type L-29 should be "medium" base under "Lamp."

Type L-29 should be "Fig. No. 28."

Type L-30 should be "Fig. No. 29."

Type L-31 should be "Fig. No. 30."

Page 17

Type L-24 and L-25 should be "20 in." under "Type."

Type L-24 should be "Fig. No. 31."

Type L-25 should be "Fig. No. 32."

Glass Color Plates refer to "Fig. No. 33."

H = Horizontal, V = Vertical.

Beam diameter in feet = Distance from projector in feet $\times$ Factor F.

§ Lightly stippled recommended instead of clear, because of smoother beam.

250-watt floodlighting lamp can be used by adding GE070 adapter. Refer to General Office for illuminating data.

ΔSocket extension may be obtained for 500- and 300-watt general service-lamps, 7 in. light center.

LAMP DATA

Used with	Watts	Volts	Base	Bulb (Clear Glass)	Life in Hours	Lumens	Light Center Length (In.)	Maximum Over-all Dimen- sions (In.)	Service	Std. Pkg. Qty.
L-29 and L-30 Projectors	* 250	110, 115, 120	Medium	G-30	800	3375	3	5 $\frac{1}{8}$	Floodlighting	24
°L-31 Projector	† 300	110 to 120 & 220 to 250	Mogul	PS-35	1000	5400	7	9 $\frac{7}{16}$	General	24
°L-31 Projector	† 500	110 to 120 & 220 to 250	Mogul	PS-40	1000	9600	7	9 $\frac{13}{16}$	General	12
L-25, L-30, and L-31 Projectors	500	110, 115, 120	Mogul	G-40	800	8150	4 $\frac{1}{4}$	7 $\frac{1}{16}$	Floodlighting	12
L-24 and L-31 Projectors	† 1000	110 to 120 & 220 to 250	Mogul	PS-52	1000	21000	9 $\frac{1}{2}$	13 $\frac{1}{8}$	General	8
L-24 and L-31 Projectors	† 750	110 to 120 & 220 to 250	Mogul	PS-52	1000	15000	9 $\frac{1}{2}$	13 $\frac{1}{8}$	General	8
L-25 and L-31 Projectors	1000	110, 115, 120	Mogul	G-40	800	18000	5 $\frac{3}{16}$	7 $\frac{7}{8}$	Floodlighting	12
L-24 Projector	1500	110 to 220 & 220 to 250	Mogul	PS-52	1000	30000	9 $\frac{1}{2}$	13 $\frac{1}{8}$	General	8

* This lamp can only be used in the L-30 projector with an adapter, Cat. No. GE070.

† General-service lamps can be obtained for 110, 115, 120, or 220, 230, 240, and 250 volts. Floodlighting lamps can be obtained for 110, 115, and 120 volts only.

^o Socket extensions are required when these lamps are used with L-31.

NOVALUX FLOODLIGHTING PROJECTORS

HOW TO FOCUS

In focusing, care should be taken to see that the center of the lamp filament is in the exact center of the rear reflector. It is also important that the filament be brought into the focal point along the horizontal axis at right angles to the adjustment mentioned on previous pages.

METHOD OF SOLVING FLOODLIGHTING PROBLEMS

Assume a light-colored building, 100 by 80 ft., total area 8000 sq. ft. Location, residential section. Units must be installed 25 feet from surface to be illuminated.

What type of floodlighting unit, foot-candle intensity, and number of units are required?

FLOODLIGHTING INTENSITIES

$$N = \frac{A \times E}{L}$$

N = Number of projectors.
 A = Area of building façade.
 E = Foot-candle intensity required.
 L = Beam lumens delivered by one projector.

Application	RECOMMENDED FOOT-CANDLE INTENSITIES	
	Good Practice	Minimum
(1) Office buildings.....	See following table	See following table
Hotels.....		
Banks.....		
Stores.....		
Theatres.....		
Factories.....	0.15	0.1
Power stations.....		
(2) Monuments		
Public buildings.....		
(3) Railroad yards		
(a) Classification.....	1.0	0.5
(b) Mechanical retarder areas.....	3.0	2.0
Docks, loading platforms, etc.....	1.0	0.5
Aqueducts.....	1.0	0.5
Reservoirs.....	1.0	0.5
Mines.....	1.0	0.5
(4) Swimming pools.....	6.0	3.0
Bathing beaches.....	1.0	0.5
(5) Billboards.....	30.0	10.0
Signs.....	30.0	10.0
Smokestacks and water tanks.....	12.0	8.0
(6) Base-ball.....	12.0	6.0
Football.....	12.0	6.0
Soccer field.....	12.0	6.0
Stadiums.....	12.0	6.0
Trap shooting.....	15.0	10.0
Playground.....	4.0	2.0
Golf greens.....	10.0	6.0
(7) Winter sports.....	2.0	1.0
(8) Pageants	20.0	5.0
Carnivals		
Expositions		
Circuses		
Fairs	15.0	10.0
(9) Gasoline filling stations		
(a) Buildings and pumps.....		
(b) Yard and driveways.....		
Roadside stands.....	4.0	2.0
Parking areas.....	4.0	2.0
Tourists' camps.....	1.0	0.5
(10) Quarries and ship yards.....	2.0	0.5
Construction work.....	6.0	2.0
Dredging.....	6.0	4.0
(11) Real estate developments.....	2.0	1.0
Public auctions.....	10.0	5.0
(12) Decorative and spectacular effects	20.0	10.0
(Christmas trees, flags, etc.).....		
Landscapes.....		
Stained glass windows.....	15.0	5.0
(13) Air advertising.....	30.0	15.0
(14) Farms.....	1.0	0.5
Barns.....	1.0	0.5
Chicken houses.....	1.0	0.5
Orchards.....	1.0	0.5

RECOMMENDATIONS

The L-24 and L-25 projectors are adapted for railroad yards on account of being dust-proof, and may be used with lamps up to 1500 watts capacity.

Factors given: Working distance, 25 feet; surroundings, residential section; surface of building, light. (8000 sq. ft.)

Refer to the formula for beam diameter in feet given opposite and at a working distance of 25 feet. The L-30 projector with heavily stippled door is selected because its beam covers a large area and it proves to be the most economical projector for this application.

The table of intensities shows that a light-colored surface in a residential section requires 5 foot-candles.

Refer to formula

$$N = \frac{A \times E}{L} \quad A = 8000; E = 5; L = 3840$$

$$N = \frac{8000 \text{ (sq. ft. area)} \times 5 \text{ (foot-candles)}}{3840 \text{ (beam lumens—Type L-30)}}$$

$$N = 10.4, \text{ or } 10 \text{ projectors}$$

Reasonable allowance should be made for overlapping of beams so as to produce an adequate and even illumination over the area to be floodlighted. Beam diameter can be determined from formula above.

There is a constantly increasing appreciation of the value of colored floodlighting. In many made mobile. This can both the colored and lighting and allowing t at all times.

For high commerci fluenced by street lights clear light and 4 watts results. Each propositio many considerations, brightness of surroundi special colored-floodligh laboratory.

The illuminating e Company will make floo be illuminated, upon re

Size a
Dista
Locat
Natur

Building
Surfaces

White terra cotta.....
Cream terra cotta.....
Light marble.....

Light gray limestone.....
Bedford limestone.....
Buff limestone.....
Smooth buff face brick.....

Briar hill sandstone.....
Smooth gray brick.....
Medium gray limestone.....
Common tan brick.....

Dark field gray brick...
Common red brick.....
Brownstone.....

40-60	20	12	7	
20-40	25	15	10	
10-20	30	18	*12	

A—Buildings on white ways; intensive street lighting; streets with many conflicting signs and light sources; lower portions of buildings falling under Class B locations.

B—Medium intensity white ways; secondary business streets with few conflicting signs, etc.

C—Very little conflicting light such as on residential streets, parks lighted highways, etc.

The above suggestions can be only general and it will be found necessary to modify them in many instances to fulfill local conditions. Careful consideration must be given to existing illumination which will affect the solution of the problems. Propositions involving special conditions should be referred to the illuminating engineering laboratory with complete information on conditions.

* Color lighting requires particularly careful study. It frequently is found advisable to use colored light on colored buildings, such as red light on red brick, for the best effect.

NOVALUX FLOODLIGHTING PROJECTORS

Types L-24, L-25, L-29, L-30, and L-31

ILLUMINATING DATA (For Estimating Purposes Only)

TYPE	WORKING DISTANCE	LAMP 115-VOLT	REFLECTORS	LENSES CLEAR	BEAM			TOTAL LUMENS	F	PHOTO-METRIC CURVES
					Angle in Degrees	Candles	Lumens			
L-29	Up to 200 ft.	250-watt G-30 Flood-light Lamp 3 in. L.C. Medium Base	10 7/16-in. Parabolic Glass Silver Plated	Plain Lightly Stippled Heavily Stippled 40 Degree Spread	15 25 34 15V-49H	85000 25000 18800 20400	1500 1550 1610 1700	2385 2350 2330 2380	0.26 0.44 0.61 0.26V-0.91H	C-61242 H-32853 H-32854
			10 7/16-in. Asymetric	40 Degree Spread	.....	.....	.....	.....	.....	.....
L-30	Up to 400 ft.	π500-watt G-40 Flood-light Lamp 4 1/2 in. L.C. Mogul Base	14 3/4-in. Medium Angle Glass Silver Plated	Plain Lightly Stippled Heavily Stippled 40 Degree Spread	12 28 50 14V-42H	305000 54000 28000 78000	3405 3650 3840 3700	6100 5900 5780 5810	0.21 0.5 0.93 0.25V-0.77H	H-130841 H-132941 H-130842 H-132759
			14 3/4-in. Asymetric	40 Degree Spread	.....	.....	.....	.....	.....	.....
L-30	Up to 100 ft.	π500-watt G-40 Flood-light Lamp 4 1/2 in. L.C. Mogul Base	14 3/4-in. Wide Angle One-piece Sectional Glass, Silver Plated	Plain Lightly Stippled Heavily Stippled	50 57 90	21000 12000 6500	3270 3500 4320	4950 4800 4680	0.93 1.09 2.00	C-61148 C-61149
			14 3/4-in. Asymetric	40 Degree Spread	.....	.....	.....	.....	.....	.....
L-31	Up to 175 ft.	Δ1000-watt PS-52 General Serv- ice Lamp 9 1/2 in. L.C. Mogul Base	14 3/4-in. Wide Angle Composite One- piece Solid Glass Silver Plated	Plain §Lightly Stippled Heavily Stippled 40 Degree Spread	28 30V-36H 65V-77H 20V-49H	90000 71700 21000 67500	6200 6550 6866 6530	13200 13100 12200 13050	 0.54V-0.65H 1.27V-1.59H 0.35V-0.91H	 H-132935 H-132936 H-132937
			14 3/4-in. Asymetric	40 Degree Spread	.....	.....	.....	.....	.....	.....
L-31	Up to 800 ft.	1000-watt G-40 Flood-light Lamp 5 3/16 in. L.C. Mogul Base	14 3/4-in. Medium Angle Glass Silver Plated	Plain §Lightly Stippled Heavily Stippled 40 Degree Spread	12 28 50 14V-44H	310000 110000 50000 160000	7450 7750 8400 8100	13100 12900 12600 12700	0.21 0.50 0.93 0.25V-0.81H	..... ..... ..... .....
			14 3/4-in. Asymetric	40 Degree Spread	.....	.....	.....	.....	.....	.....
L-24	Up to 1500 ft.	1500-watt PS-52 General Service Lamp 9 1/2 in. L.C. Mogul Base	20-in. Medium Angle Two-piece Glass Silver Plated	Plain Lightly Stippled 50 Degree Spread	17.5V-28H 25.5V-29.5H 19V-63.5H	348600 187000 118600	12750 12560 13813	21440 20600 21300	0.31V-0.41H 0.45V-0.53H 0.33V-1.24H	H-132995 H-132996 H-132997
			20-in. Medium Angle Two-piece Glass Silver Plated	Plain Lightly Stippled 50 Degree Spread	18V-21.5H 25V-29H 18.5V-63H	253000 131000 85700	8785 8665 9410	14720 14530 15160	0.32V-0.38H 0.44V-0.52H 0.33V-1.23H	H-132934 H-132993 H-132994
L-25	Up to 2000 ft.	1000-watt G-40 Flood-light Lamp 5 3/16 in. L.C. Mogul Base	20-in. Medium Angle Two-piece Glass Silver Plated	Plain Lightly Stippled 50 Degree Spread	11.9V-15.5H 22 13V-56H	432000 175000 112000	6855 7315	12440 12150 12700	0.21V-0.27H 0.39 0.23V-1.06H	H-133101 H-133104 H-133105

H = Horizontal, V = Vertical.

Beam diameter in feet = Distance from projector in feet × Factor F.

§ Lightly stippled recommended instead of clear, because of smoother beam.

π 250-watt floodlighting lamp can be used by adding GE070 adapter. Refer to General Office for illuminating data.

Δ Socket extension may be obtained for 500- and 300-watt general service-lamps, 7 in. light center.

LAMP DATA

Used with	Watts	Volts	Base	Bulb (Clear Glass)	Life in Hours	Lumens	Light Center Length (In.)	Maximum Over-all Dimensions (In.)	Service	Std. Pkg. Qty.
L-29 and L-30 Projectors	* 250	110, 115, 120	Medium	G-30	800	3375	3	5 1/8	Floodlighting	24
°L-31 Projector	† 300	110 to 120 & 220 to 250	Mogul	PS-35	1000	5400	7	9 7/16	General	24
°L-31 Projector	† 500	110 to 120 & 220 to 250	Mogul	PS-40	1000	9600	7	9 13/16	General	12
L-25, L-30, and L-31 Projectors	500	110, 115, 120	Mogul	G-40	800	8150	4 1/4	7 1/16	Floodlighting	12
L-24 and L-31 Projectors	†1000	110 to 120 & 220 to 250	Mogul	PS-52	1000	21000	9 1/2	13 1/8	General	8
L-24 and L-31 Projectors	† 750	110 to 120 & 220 to 250	Mogul	PS-52	1000	15000	9 1/2	13 1/8	General	8
L-25 and L-31 Projectors	1000	110, 115, 120	Mogul	G-40	800	18000	5 3/16	7 7/8	Floodlighting	12
L-24 Projector	1500	110 to 220 & 220 to 250	Mogul	PS-52	1000	30000	9 1/2	13 1/8	General	8

* This lamp can only be used in the L-30 projector with an adapter, Cat. No. GE070.

† General-service lamps can be obtained for 110, 115, 120, or 220, 230, 240, and 250 volts. Floodlighting lamps can be obtained for 110, 115, and 120 volts only.

° Socket extensions are required when these lamps are used with L-31.

NOVALUX FLOODLIGHTING PROJECTORS

Types L-24, L-25, L-29, L-30, and L-31

NON-FERROUS CASINGS—GLASS REFLECTORS

TYPE	MOUNTING	LAMP	REFLECTOR	FIG. NO.	LENS		FOR 110- TO 120- AND 220- TO 250-VOLT MULTIPLE CIRCUITS OR WITH SERIES MULTIPLE IL TRANSFORMER			
					Type	† Color	Cat. No.	List Price Class H	Approx. Wt. in Lb.	
L-29 12 1/4-in. Totally Enclosed	Swivel and Rocker	250-watt G-30 Floodlight Mogul Base	10 7/16-in. Parabolic Glass Silver Plated	1	Plain	Clear	1229485G23	\$32.00	63	16
					Plain	Red	1229485G28	35.00	63	16
					Plain	Amber	1229485G29	35.00	63	16
					Plain	Blue	1229485G30	35.00	63	16
					Plain	Green	1229485G31	35.00	63	16
					Lightly Stippled	Clear	1229485G27	32.00	63	16
					Heavily Stippled	Clear	1229485G24	32.00	63	16
					Heavily Stippled	Red	1229485G32	35.00	63	16
					Heavily Stippled	Amber	1229485G33	35.00	63	16
					Heavily Stippled	Blue	1229485G34	35.00	63	16
					Heavily Stippled	Green	1229485G35	35.00	63	16
					40 Degree Spread	Clear	1229485G25	32.00	63	16
L-30 17 1/4-in. Totally Enclosed	Swivel and Trunnion	500-watt, G-40 Floodlight Mogul Base or 250-watt G-30 Floodlight Medium Base by Adding Cat. No. GE070 Adapter. Specify on Requisition. No addition.	14 3/4-in. Medium Angle Glass Silver Plated	2	Plain	Clear	1229485G1	47.00	93	33
					Plain	Red	1229485G37	53.00	93	33
					Plain	Amber	1229485G38	53.00	93	33
					Plain	Blue	1229485G39	53.00	93	33
					Plain	Green	1229485G40	53.00	93	33
					Lightly Stippled	Clear	1229485G4	47.00	93	33
					Heavily Stippled	Clear	1229485G3	47.00	93	33
					Heavily Stippled	Red	1229485G41	53.00	93	33
					Heavily Stippled	Amber	1229485G42	53.00	93	33
			14 3/4-in. Asym- etric Glass Silver Plated	.....	40 Degree Spread	Clear	1229485G36	50.00	93	33
			14 3/4-in. Wide Angle One-piece Sectional Glass Silver Plated	3	Plain	Clear	1229485G6	47.00	93	33
					Plain	Red	1229485G45	53.00	93	33
					Plain	Amber	1229485G46	53.00	93	33
					Plain	Blue	1229485G47	53.00	93	33
					Lightly Stippled	Green	1229485G48	53.00	93	33
					Lightly Stippled	Clear	1229485G9	47.00	93	33
			14 3/4-in. Asym- etric Glass Silver Plated	.....	40 Degree Spread	Clear	1229485G53	60.00	108	38
L-31 18-in. Totally Enclosed	Swivel and Trunnion	† 1000- or 750-watt PS-52 General Service Mogul Base	14 3/4-in. Wide Angle Composite One-piece Solid Glass Silver Plated	4	Plain	Clear	1229485G13	57.00	108	38
					Plain	Red	1229485G54	63.00	108	38
					Plain	Amber	1229485G55	63.00	108	38
					Plain	Blue	1229485G56	63.00	108	38
					Plain	Green	1229485G57	63.00	108	38
					Lightly Stippled	Clear	1229485G16	57.00	108	38
					Heavily Stippled	Clear	1229485G15	57.00	108	38
					Heavily Stippled	Red	1229485G58	63.00	108	38
					Heavily Stippled	Amber	1229485G59	63.00	108	38
					Heavily Stippled	Blue	1229485G60	63.00	108	38
					Heavily Stippled	Green	1229485G61	63.00	108	38
					40 Degree Spread	Clear	1229485G17	57.00	108	38
		1000-watt G-40 Floodlight Mogul Base	14 3/4-in. Medium Angle Glass Silver Plated	5	Plain	Clear	1229485G18	57.00	108	38
					Plain	Red	1229485G63	63.00	108	38
					Plain	Amber	1229485G64	63.00	108	38
					Plain	Blue	1229485G65	63.00	108	38
					Plain	Green	1229485G66	63.00	108	38
					Lightly Stippled	Clear	1229485G21	57.00	108	38
					Heavily Stippled	Clear	1229485G20	57.00	108	38
					Heavily Stippled	Red	1229485G67	63.00	108	38
					Heavily Stippled	Amber	1229485G68	63.00	108	38
					Heavily Stippled	Blue	1229485G69	63.00	108	38
					Heavily Stippled	Green	1229485G70	63.00	108	38
					40 Degree Spread	Clear	1229485G22	57.00	108	38
		14 3/4-in. Asym- etric Glass Silver Plated	.....	.....	40 Degree Spread	Clear	1229485G62	60.00	108	38

Prices subject to change without notice.

(See Footnotes on page 17)

NOVALUX FLOODLIGHTING PROJECTORS

Types L-24, L-25, L-29, L-30, and L-31

TYPE	MOUNTING	LAMP	REFLECTOR	FIG. No.	LENS ON OUTSIDE OF DOOR		FOR 110- TO 120- AND 220- TO 250-VOLT MULTIPLE CIRCUITS OR WITH SERIES MULTIPLE IL TRANSFORMER			
					Type	† Color	Cat. No.	List Price Class H	Approx. Wt. in Lb.	
									Ship.	Net
L-24 18-in. *without Visor Totally Enclosed	Swivel and Trunnion	1500.- 1000- or 750-watt PS-52 General Service Mogul Base	18 1/2-in. Medium Angle Two-piece Glass, Silver Plated	6	Plain	Clear	3125183	\$120.00	176	74
					Lightly Stippled	Clear	3125184	120.00	176	74
					50 Degree Spread	Clear	3125185	120.00	176	74
L-25 18-in. *without Visor Totally Enclosed	Swivel and Trunnion	1000-watt G-40 Floodlight Mogul Base	18 1/2-in. Medium Angle Two-piece Glass, Silver Plated	7	Plain	Clear	3125186	\$120.00	170	69
					Lightly Stippled	Clear	3125187	120.00	170	69
					50 Degree Spread	Clear	3125200	120.00	170	69

* If visor is required specify Cat. No. 3758078P1 at **\$5.00** each, Class H.

† For color plates see table below.

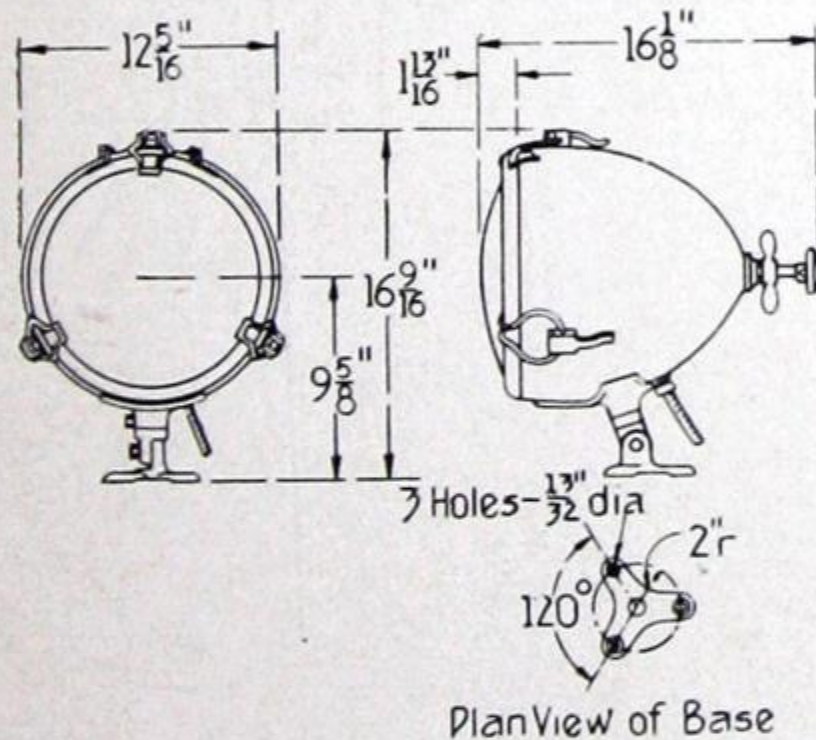
‡ 500- and 300-watt general service lamps may be used by addition of socket extension. Refer to General Office. Prices subject to change without notice.

† GLASS COLOR PLATES FOR USE WITH PROJECTORS EQUIPPED WITH CLEAR LENS

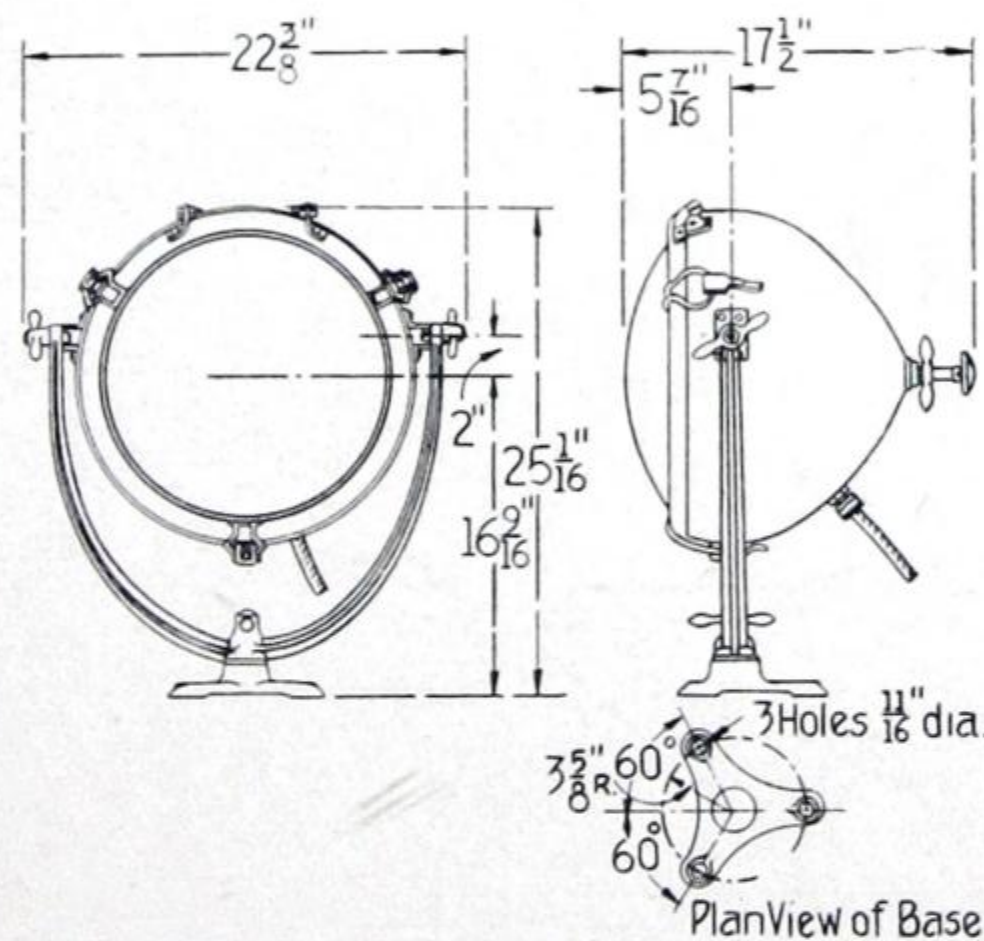
	CAT. NO.				LIST PRICE Class H	SHIP. WT. in Lb. Carton of 6	NET WT. in Lb.
	Red	Amber	Blue	Green			
For use with Type L-29.....	3758111G5	3758111G6	3758111G7	3758111G8	\$3.75	11	1.5
For use with Type L-30 and L-31.....	3758111G1	3758111G2	3758111G3	3758111G4	5.00	22	2.5

DIMENSIONS

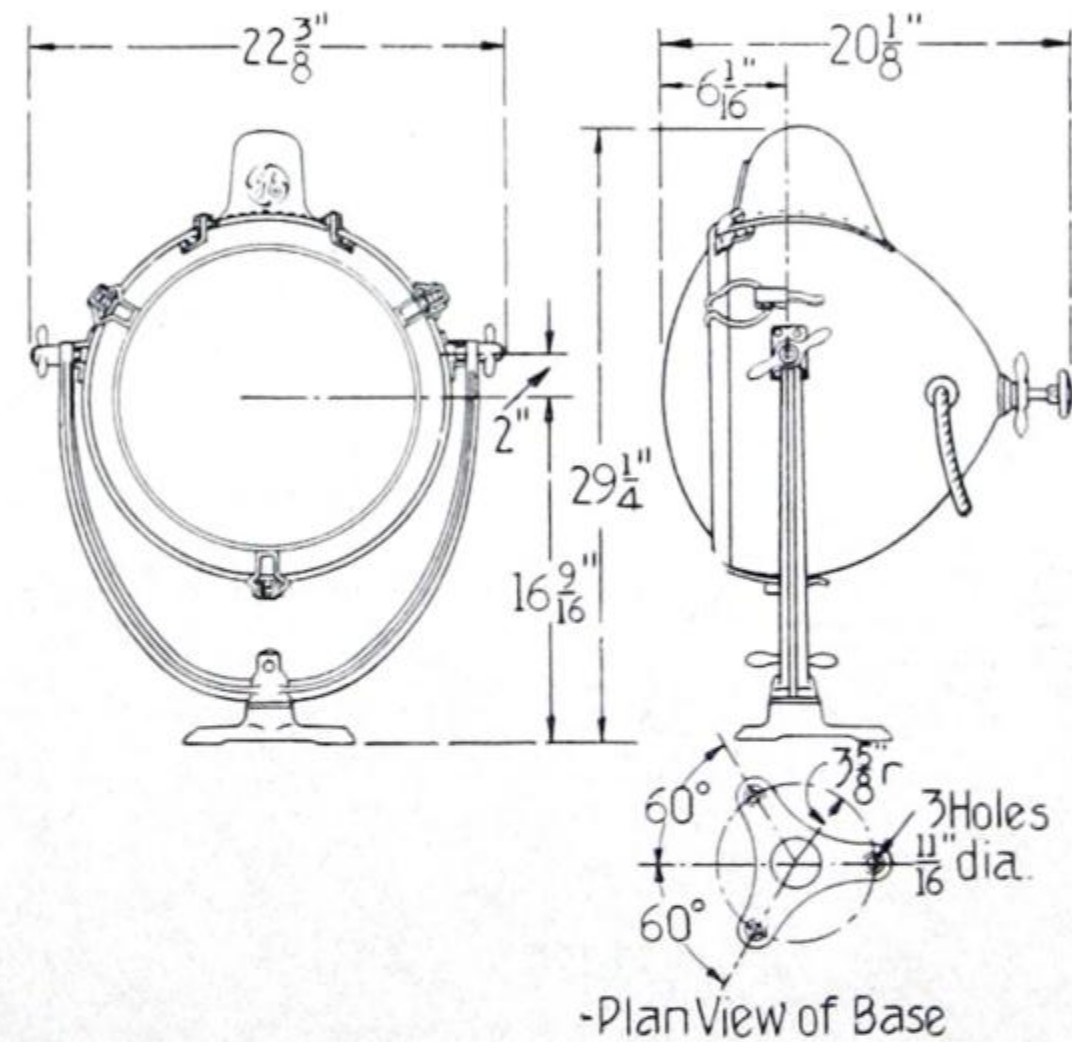
(For Reference only—Not for construction)



(K-3758023)
Fig. 28
Type L-29



(K-3758028)
Fig. 29
Type L-30



(K-3758025)
Fig. 30
Type L-31

NOVALUX FLOODLIGHTING PROJECTORS

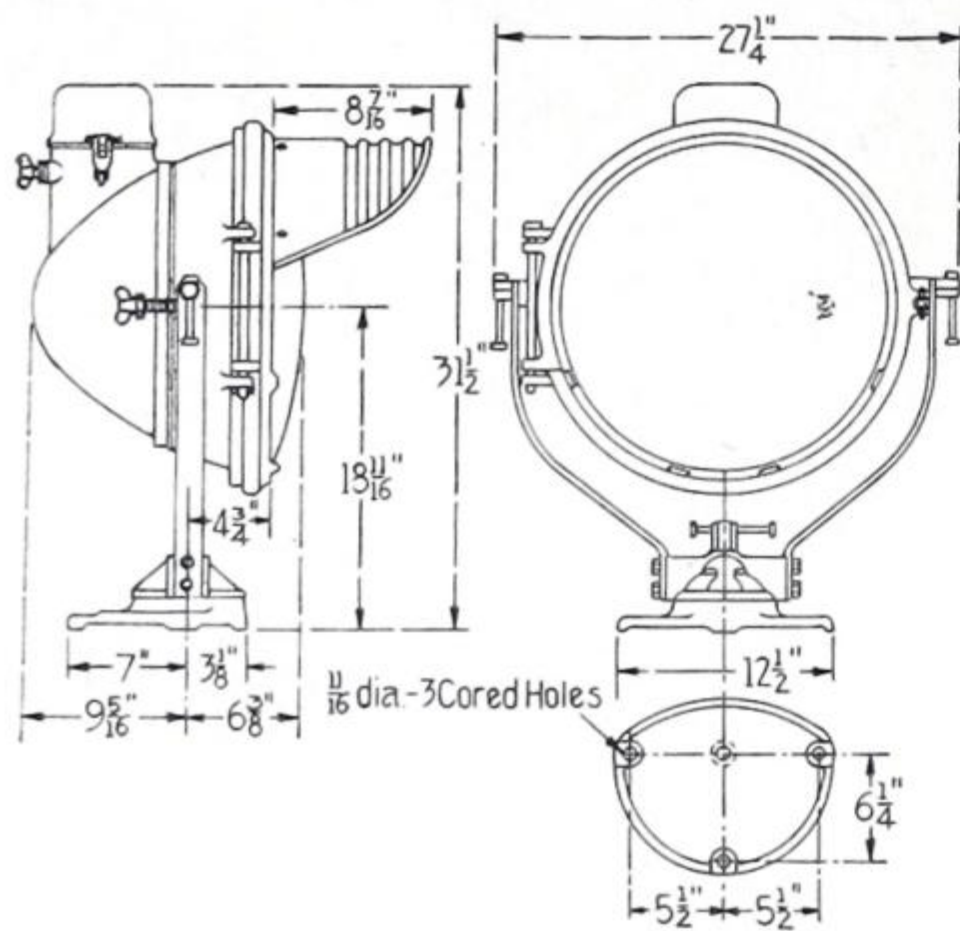


Fig. 31
(K-3740073)
Type L-24 Floodlighting Projector
with Visor

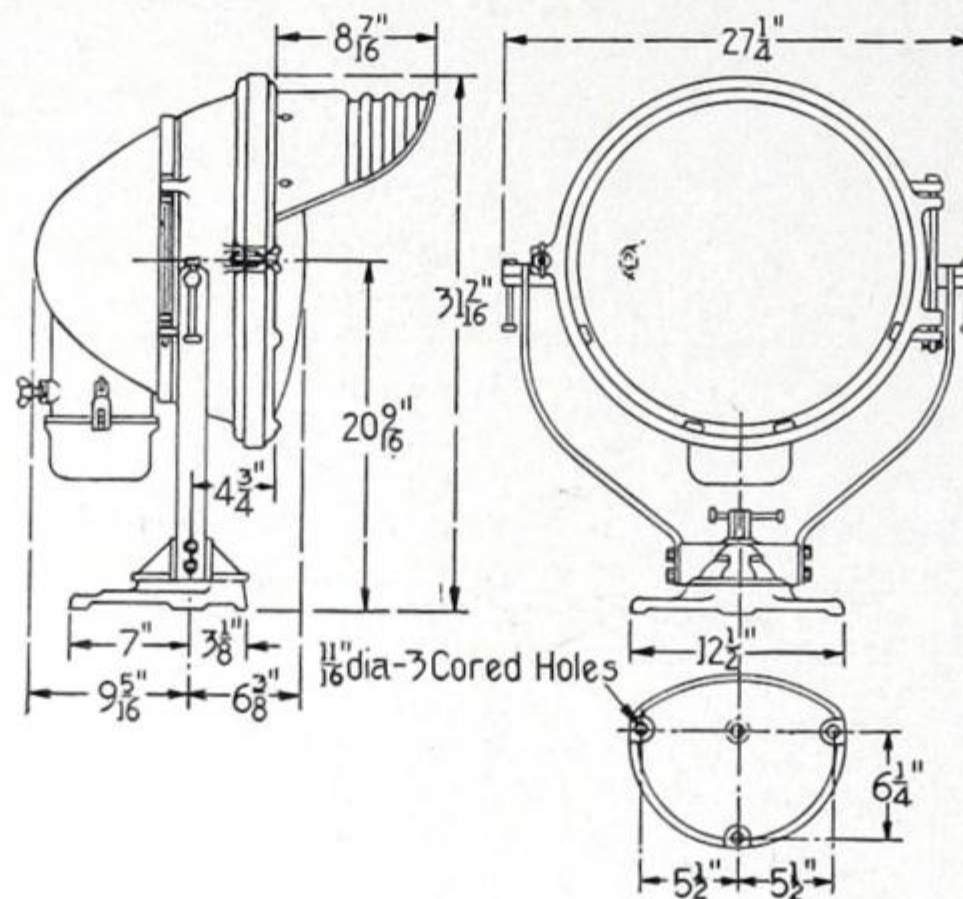


Fig. 32
(K-3740075)
Type L-25 Floodlighting Projector
with Visor

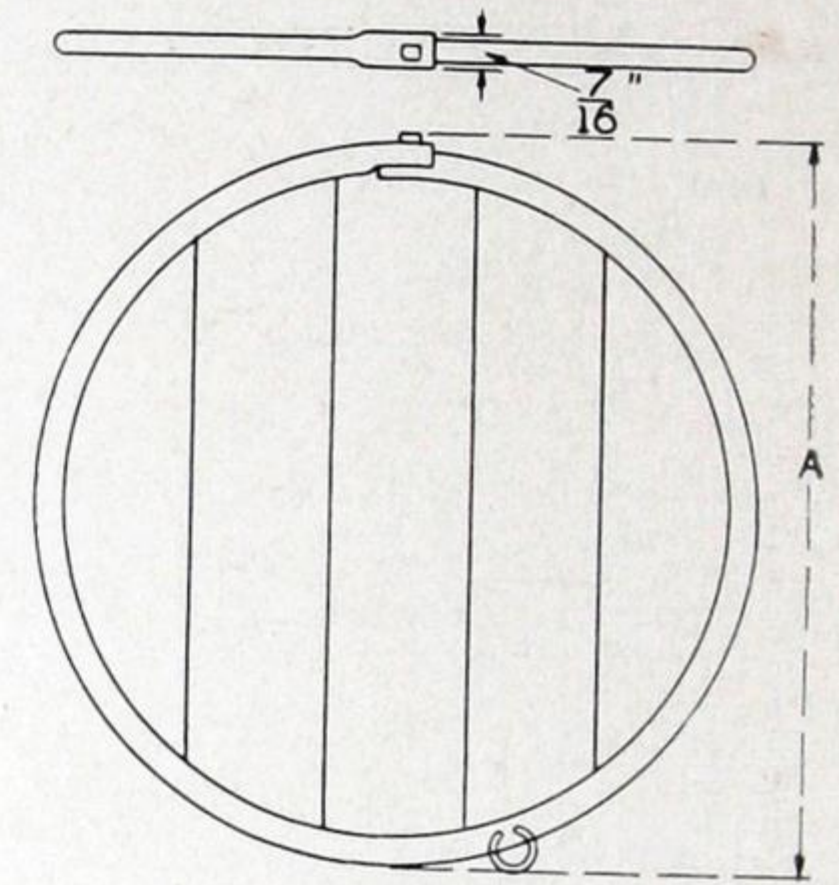
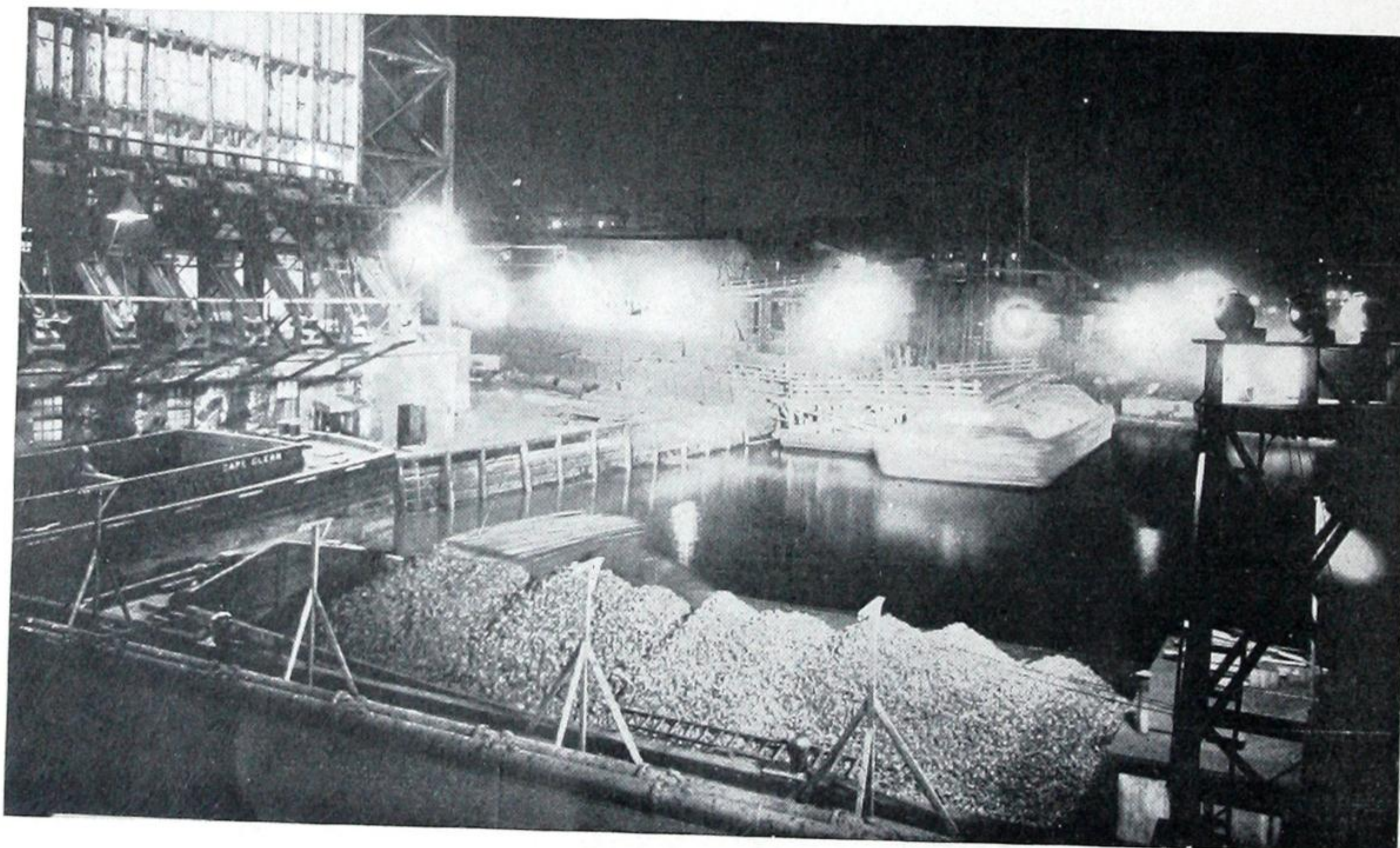


Fig. 33
Dimensions of Color Screen
A = { For Type L-29.....10 5/16 in.
For Types L-30 & L-31.....14 11/16 in.



(Photo No. 239933)
Fig. 34
Docks Illuminated by G-E Floodlighting Projectors

NOVALUX FLOODLIGHTING PROJECTORS

Submersible Fountain Type

TYPE L-23



Fig. 35

(Photo No. 277022)

Cat. No. 3049414

*DESCRIPTION

This projector is constructed of non-ferrous material. The door frame, casing, and trunnion bracket are of special aluminum alloy.

It is equipped with a servicing device which consists of a large brass tube that screws into a brass base plate; and a smaller tube, assembled to the trunnion bracket, which slides inside of the larger tube. The smaller tube is slotted and fitted with three bayonet joints. These engage a stop screw which is assembled into the larger tube and projects inside it. The projector may be raised or lowered so that it can be lifted above the surface of the water in the fountain in order that the front door may be removed and the device serviced or relamped.

The front-door glass is gasketed by rubber packing, and the door casting is gasketed against the casing.

The projector has a $\frac{3}{4}$ -in. pipe-tapped hole midway of the casing for a $\frac{3}{4}$ -in. pipe nipple through which the lead cable passes. A wiped joint can be made between the brass bushing and the lead cable.

The device is also provided with two other $\frac{3}{4}$ -in. tapped holes to which a drain pipe, which may be a rubber hose or a flexible lead cable, can be attached. The reason for the two holes is that when the projector is set with the beam in the

vertical position, the bottom hole can be used for draining away any condensation which may occur inside of the projector. This also permits atmospheric pressure always being maintained within the projector. If the projector is used with the beam horizontal or nearly so, the plug in the top hole can be removed and put into the bottom hole and the drain pipe can then be put into the hole from which the plug was removed. It is very advisable when installing these projectors to put the drain pipe in because it is desirable that atmospheric pressure be maintained. Otherwise the heat from the lamp will change the density of the air inside the projector, and, when the lamp is turned off and the projector cools, there is a tendency toward a vacuum or, at least, a lower air pressure. This is likely to create a breathing effect and may, under some circumstances, cause water to enter the projector.

A sliding screw focusing mechanism is provided which allows the lamp to be moved along the axis of the reflector, either up or down, by pulling or pushing the bulb.

The 16-in. glass reflector is silver plated and coated with electrolytically deposited copper.

Either the 500-watt or 1000-watt, 110-volt floodlighting lamp may be used.

* Prices and other data are available at the nearest G-E Sales Office.

GENERAL ELECTRIC COMPANY

GENERAL OFFICE



SCHENECTADY, N. Y.

Sales Offices—Address nearest Office

Akron, Ohio.....	159 South Main Street	Memphis, Tenn.....	130 Madison Avenue
Amarillo, Tex.....	802 South Grant Street	Miami, Fla.....	25 Southeast Second Avenue
Atlanta, Ga.....	187 Spring Street, Northwest	Milwaukee, Wis.....	425 East Water Street
Baltimore, Md.....	39 West Lexington Street	Minneapolis, Minn.....	107 South Fifth Street
Binghamton, N. Y.....	19 Chenango Street	Nashville, Tenn.....	234 Third Avenue, North
Birmingham, Ala.....	602 North Eighteenth Street	Newark, N. J.....	20 Washington Place
Bluefield, W. Va.....	307 Federal Street	New Haven, Conn.....	129 Church Street
Boston, Mass.....	84 State Street	New Orleans, La.....	837 Gravier Street
Buffalo, N. Y.....	39 East Genesee Street	New York, N. Y.....	120 Broadway
Butte, Mont.....	20 West Granite Street	Niagara Falls, N. Y.....	201 Falls Street
Canton, Ohio.....	700 Tuscarawas Street, West	Oklahoma City, Okla.....	15 North Robinson Street
Charleston, W. Va.....	201 Capitol Street	Omaha, Nebr.....	409 South Seventeenth Street
Charlotte, N. C.....	200 South Tryon Street	Philadelphia, Pa.....	1321 Walnut Street
Chattanooga, Tenn.....	536 Market Street	Phoenix, Ariz.....	11 West Jefferson Street
Chicago, Ill.....	230 South Clark Street	Pittsburgh, Pa.....	535 Smithfield Street
Cincinnati, Ohio.....	215 West Third Street	Portland, Ore.....	329 Alder Street
Cleveland, Ohio.....	925 Euclid Avenue	Providence, R. I.....	76 Westminster Street
Columbus, Ohio.....	17 South High Street	Richmond, Va.....	700 East Franklin Street
Dallas, Tex.....	1801 North Lamar Street	Roanoke, Va.....	202 South Jefferson Street
Davenport, Iowa.....	111 East Third Street	Rochester, N. Y.....	89 East Avenue
Dayton, Ohio.....	25 North Main Street	St. Louis, Mo.....	112 North Fourth Street
Denver, Colo.....	650 Seventeenth Street	Salt Lake City, Utah.....	200 South Main Street
Des Moines, Iowa.....	418 West Sixth Avenue	San Antonio, Tex.....	601 Navarro Street
Detroit, Mich.....	700 Antoinette Street	San Francisco, Calif.....	235 Montgomery Street
Duluth, Minn.....	14 West Superior Street	Schenectady, N. Y.....	1 River Road
El Paso, Tex.....	109 North Oregon Street	Seattle, Wash.....	811 First Avenue
Erie, Pa.....	10 East Twelfth Street	Spokane, Wash.....	421 Riverside Avenue
Fort Wayne, Ind.....	1635 Broadway	Springfield, Mass.....	1387 Main Street
Grand Rapids, Mich.....	201 Monroe Avenue	Syracuse, N. Y.....	113 South Salina Street
Hartford, Conn.....	18 Asylum Street	Tacoma, Wash.....	950 Pacific Avenue
Houston, Tex.....	1016 Walker Avenue	Tampa, Fla.....	112 Cass Street
Indianapolis, Ind.....	106 North Illinois Street	Terre Haute, Ind.....	701 Wabash Avenue
Jackson, Mich.....	212 Michigan Avenue, West	Toledo, Ohio.....	520 Madison Avenue
Jacksonville, Fla.....	11 East Forsyth Street	Tulsa, Okla.....	409 South Boston Street
Kansas City, Mo.....	1004 Baltimore Avenue	Utica, N. Y.....	258 Genesee Street
Knoxville, Tenn.....	602 South Gay Street	Washington, D. C.....	1405 G Street, Northwest
Little Rock, Ark.....	223 West Second Street	Waterbury, Conn.....	195 Grand Street
Los Angeles, Calif.....	5201 Santa Fe Avenue	Worcester, Mass.....	340 Main Street
Louisville, Ky.....	455 South Fourth Street	Youngstown, Ohio.....	16 Central Square

Canada: Canadian General Electric Company, Ltd., Toronto

Hawaii: W. A. Ramsay, Ltd., Honolulu

Motor Dealers and Lamp Agencies in all large cities and towns

SERVICE SHOPS

Atlanta, Ga.....	496 Glenn Street, Southwest	Los Angeles, Calif.....	5203 Santa Fe Avenue
Buffalo, N. Y.....	318 Urban Street	Minneapolis, Minn.....	410 Third Avenue, North
Chicago, Ill.....	509 East Illinois Street	New York, N. Y.....	627 Greenwich Street
Cincinnati, Ohio.....	215 West Third Street	Philadelphia, Pa.....	1223 Washington Avenue
Cleveland, Ohio.....	1133 East 152nd Street	St. Louis, Mo.....	1009 Spruce Street
Dallas, Tex.....	1801 North Lamar Street	Salt Lake City, Utah.....	360 West Second South Street
Detroit, Mich.....	700 Antoinette Street	Seattle, Wash.....	1508 Fourth Avenue, South
Kansas City, Mo.....	819 East Nineteenth Street		

Special service divisions are also maintained at the following works of the Company: Erie, Pa.; Fort Wayne, Ind.; Oakland, Calif.; Pittsfield, Mass.; Schenectady, N. Y.; and West Lynn, Mass.—River Works and West Lynn Works.

BROADCASTING STATIONS

WGY, Schenectady, N. Y. KOA, Denver, Colo. KCO, Oakland, Calif.

Distributors for the General Electric Company outside of the United States and Canada

INTERNATIONAL GENERAL ELECTRIC COMPANY, INC.

New York City, 120 Broadway

General Sales Offices, Schenectady, N. Y.

FOREIGN OFFICES, ASSOCIATED COMPANIES AND AGENTS

ARGENTINA: General Electric, S. A., Buenos Aires, Cordoba, Rosario de Santa Fé, and Tucuman
 AUSTRALIA: Australian General Electric Company, Ltd., Sydney, Melbourne, Adelaide, Brisbane and Newcastle
 BELGIUM AND COLONIES: Societe d'Electricite et de Mecanique (Procedes Thomson-Houston & Carels)
 Societe Anonyme, Brussels, Belgium
 BRAZIL: General Electric, S. A., Rio de Janeiro, Sao Paulo, Bahia and Porto Alegre
 CENTRAL AMERICA: International General Electric Co., Inc., New Orleans, La.
 CHILE: International Machinery Company, Santiago, Antofagasta and Valparaiso, Nitrate Agencies, Ltd., Iquique
 CHINA: Andersen, Meyer & Company, Ltd., Shanghai; China General Edison Company, Shanghai
 COLOMBIA: International General Electric, S. A., Bogota, Barranquilla, and Medellin
 CUBA: General Electric Company of Cuba, Havana, and Santiago de Cuba
 DUTCH EAST INDIES: International General Electric Company, Inc., Soerabaya, Java.
 ECUADOR: Guayaquil Agencies Co., Guayaquil
 EGYPT: British Thomson-Houston Company, Ltd., Cairo
 FRANCE AND COLONIES: Compagnie Francaise Thomson-Houston, Paris; International General Electric Co., Inc., Paris;
 Compagnie Des Lampes, Paris
 GERMANY: H. B. Peirce, Representative, General Electric Co., Berlin
 GREAT BRITAIN AND IRELAND: International General Electric Co., Inc., British Thomson-Houston Co., Ltd., London, W. C. 2;
 British Thomson-Houston Co., Ltd., Rugby
 GREECE AND COLONIES: Compagnie Francaise Thomson-Houston, Paris, France
 HOLLAND: Mijnsen & Co., Amsterdam
 INDIA: International General Electric Company, Inc., Calcutta, Bombay and Bangalore
 ITALY AND COLONIES: Compagnia Generale Di Eletticità, Milan
 JAPAN: Shibaura Engineering Works, Tokyo; Tokyo Electric Company, Ltd., Kawasaki, Kanagawa-Ken; International
 General Electric Co., Inc., Tokyo and Osaka
 JAVA: International General Electric Co., Inc., Soerabaya
 MEXICO: General Electric, S. A., City of Mexico, Guadalajara, Monterrey, Tampico, Vera Cruz, and El Paso, Texas
 NEW ZEALAND: National Electrical and Engineering Company, Ltd., Auckland, Dunedin, Christchurch, and Wellington
 PARAGUAY: General Electric, S. A., Buenos Aires, Argentina
 PERU: W. R. Grace & Company, Lima
 PHILIPPINE ISLANDS: Pacific Commercial Company, Manila
 PORTO RICO: International General Electric Company of Porto Rico, San Juan
 PORTUGAL AND COLONIES: Sociedade Iberica de Construcões Electricas Lda., Lisbon
 SOUTH AFRICA: South African General Electric Company, Ltd., Johannesburg, Capetown, Durban, and Port Elizabeth
 SPAIN AND COLONIES: Sociedad Iberica de Construcciones Electricas, Madrid, Barcelona, and Bilbao
 SWITZERLAND: Trollet Freres, Geneva
 URUGUAY: General Electric, S. A., Montevideo
 VENEZUELA: General Electric, S. A., Caracas and Maracaibo